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THE ADMIRALTY OF THE ATLANTIC

"The Admiral of the Atlantic greets the Admiral of the Pacific."

The Kaiser's signal to the Czar in the harbour of Revel, August, 1902.



Photo. Symonds & Co.

H.M.S. DREADNOUGHT. BATTLESHIP
(Flagship, Home Fleet)
Displacement : 17,900 tons. Armament : Ten 12-in.
Sister ships (improved) : *Bellerophon, Collingwood, Vanguard, St. Vincent, Superb, Téméraire*

ADMIRALTY OF
ATLANTIS



THE ADMIRALTY OF THE ATLANTIC

AN ENQUIRY INTO THE DEVELOPMENT OF GERMAN SEA POWER PAST, PRESENT, AND PROSPECTIVE

BY

PERCIVAL A. HISLAM

WITH TWENTY-ONE ILLUSTRATIONS AND A MAP

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1908

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PREFACE

THE title of this book is the object of German naval policy, and appears to call for no further explanation. The admiralty of the Atlantic, to which the German Emperor made claim in his famous but now almost forgotten signal to the Czar of Russia at Revel six years ago, can only be secured by him at the expense of the British Empire, as, indeed, can the admiralty of any stretch of the ocean. Germany has entered avowedly upon a maritime competition with Great Britain, and looks forward eagerly to the moment when she will be able to strike. She is putting far more energy into the struggle than are we. In the last year for which the complete returns are available (1906), she was insuring her merchant shipping at the rate of £4·77 per ton to our £2·5, and her coast line at £2908 per mile to our £741.

The German Navy is regarded both in England and in Germany from two points of view. In England there is the point of view of the party—at present in the ascendant—of naval reductionists, who systematically belittle the strength of Germany at sea with the object of securing some diminution in the British Navy; though if the satisfactory state of affairs in which they believe actually does exist—if England, owing to the strength and efficiency of her Fleet, really does "stand in less danger from any Power now than she has for twenty-five years"—one utterly fails to perceive why that immunity should be tampered with or endangered. This party is

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very popular in Germany, for, both positively and negatively, they are playing the game of the Teutonic "Blue Water" school. Their tactics are essentially the same as those of the Pan-Germanic leagues, to whom every German warship is "feeble" and the navy itself "puny and almost negligible," while every British ship is "mighty" and the British Fleet "powerful and more supreme than ever before." The combined effect of these two parties, each working in its own sphere, has been to increase the German Navy Estimates by six and a half millions sterling in the last four years, and to reduce the British Estimates by the same amount in the same period. For next year a slight increase has been demanded.

The policy of the other party in England is to exaggerate the strength of the German Fleet and to belittle the strength of their own. These men are often wrong in their facts; they are often the reverse of complimentary to the officers and men of the British Navy; and they often ignore well-known facts which, if mentioned, would mitigate against their case. And yet, with all their faults, nothing but good can come from their efforts, whose only result, could they be carried to fruition, would be to make the British Navy still stronger, and so to guarantee even more surely and for a longer period than will be the case if the reductionists are to continue to hold sway that *Pax Britannica* which the Fleet alone can enforce. Some one has labelled this party the "Blue Funk" school, to distinguish them, apparently, from the "Blue Water" school from which, nevertheless, no principle separates them; but if it is a sign of blue funk to aspire to a position of unassailable superiority at sea, or to agitate for such strength as shall enable us to meet any possible enemy in overwhelming numbers, then surely every British statesman

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she fully realises, but which has not received by any means its proper share of attention in this country, considering how closely her ambitions affect the existence of our Empire. The substitution of a tariff would undoubtedly lead to international complications, and possibly to a conflict; but the conflict must come sooner or later, and the sooner it comes, the shorter, less costly, and less bloody it will be.

The only other road—and it leads not out of the morass, but more deeply into it—is to go on building ships and adding millions to our naval expenditure until such time as Germany chooses to attack us. It will not be the moment most favourable to our prospects.

As originally designed, the book contained a chapter of criticism of the Home Fleet. In deference to the intention with which the Admiralty has been credited, to reorganise the *matériel*, and, what is still more important, the *personnel* of that fleet, the chapter has been omitted.

In the preparation of this work I have had the advantage of much assistance from naval officers, to whom, although I cannot give their names, I tender my sincerest thanks. Most of all my gratitude is due, and is heartily accorded, to Lieutenant H. T. C. Knox, R.N. (retired), whose lectures at St. Olave's Grammar School seven years ago first instilled in me a desire to know and understand the nature of and the need for the naval supremacy of the British people.

P. A. H.

February, 1908.

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THE ADMIRALTY OF THE ATLANTIC

I

THE INCEPTION OF THE GERMAN NAVY

AMONG the many political phenomena which have marked the closing years of the nineteenth century and the opening ones of the twentieth, none is more remarkable than the revolutionary change which has occurred in the distribution of naval strength. Relatively to any other single Power, Great Britain, it is true, occupies very much the same position as she did fifty years ago, if, indeed, she has not actually improved upon it; but whereas in the middle of last century there was but one competitor with us for maritime supremacy, there has been such an awakening in recent years to the paramount value of sea-power that every nation with ambitions —be they political, commercial, or territorial—concentrates her efforts upon the one weapon with which their realisation can be effected—a sea-going navy. The United States, whose fleet twenty years ago contained not a single armoured sea-going ship, now interprets the Monroe Doctrine in such a way as to justify the maintenance of a navy second only to our own; Japan, profiting by the lessons and the captures of two successful naval campaigns,

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has by the latter raised herself to the fourth place amongst the sea Powers of the world, and by the former has learned not only that—being an island state—on the sea alone can she defend herself, but also the vital necessity of making herself independent of foreign countries for her *matériel*. Last of all, but most important, the whole German Empire has been aroused by a steady process of education to an enthusiastic understanding of the truth of the Kaiser's declaration that its "future lies on the water."

In theory the prospects of Germany ever becoming a serious competitor for naval supremacy were very small, for she lacked that which in all past ages has been demonstrated to be an indispensable factor of sea-power—a hardy, numerous seafaring population. More than once in history has this deficiency proved fatal to the most earnest attempts at the creation of a German fleet. Frederick William, the Great Elector of Brandenburg (1640–88), generally regarded as the founder of German naval power, spent a considerable portion of his youth in Holland, and, like Peter the Great, returned to his own country with a keen desire to acquire for it some of the security and prosperity which the Dutch had derived from their naval strength. From the first, however, he found himself confronted by almost insuperable difficulties. England, France, and Holland united in doing everything possible to retard the development of a new maritime rival; but natural difficulties presented a far more serious obstacle. Outside the Baltic Sea he possessed no coast-line, no ports capable of development as naval bases; and although he concluded a treaty with the town of Emden, by virtue of which he was allowed to use that port as a fleet base in return for defending the commerce of the town at sea, the arrangement was made too late for it to

be of any value. While the Brandenburg navy existed it was based on Pillau.

But even more fatal to the Elector's ambitions was the absolute ignorance which prevailed in his State of all questions connected with the sea. There was no one who knew anything of naval construction, of the handling of ships, or of the conduct of naval war; and Frederick William, with a determination which merited better results, adopted an expedient at which we, who live in days when the essentials of sea-power are well known, can afford to smile. Finding it impossible to create a navy from the internal resources of his kingdom, he hired from a Hamburg shipowner, Raul by name, a complete fleet, fully equipped with officers and crews, guns, stores, and ammunition. From truck to keel this mercenary force was the work of foreigners, both in construction and maintenance, and although the first admiral, a Dutchman named Tromp, was succeeded by a German named Adler, he is the only native who is recorded to have served in it. During the many wars with which the reign of the Great Elector was mainly occupied, the Brandenburg fleet acquitted itself well against French, Danes, Swedes, and Spaniards, and its traditions are still honourably preserved in the German Navy of to-day. But its foundations were rotten, and the aspirations of the Great Elector died with him in 1688. Within thirty years of his death the fleet, which had been bought outright in the meantime, had disappeared, and the German flag practically vanished from the ocean until the middle of the nineteenth century.

The second period in the history of Germany at sea was destined to end even more ignominiously. In the wars which followed the revolt of the provinces of Schleswig and Holstein in 1848, the Danish fleet completely

blockaded the German ports in the North Sea and Baltic, and brought home to the Germans in a manner as unpleasant as it was temporarily effective the vital need of a naval force. Public meetings were held all over the Empire—as yet but a conglomeration of independent states—to demand the immediate acquisition, either by purchase or construction, of a fleet which should at least make them capable of offering an honourable resistance to the enemy at sea. A proposal to this effect was brought before the Confederate Assembly at Frankfort and carried with enthusiasm, and each state contributed in money and in kind to the creation of an imperial fleet. Six million thalers (£900,000) were voted by the Assembly, and the women of Prussia, anticipating by half a century the dames of the Flotten Verein, subscribed amongst themselves sufficient money for the purchase of a complete ship of war. Thus was the first German Imperial Navy brought into being. At the head of the movement was Prince Adalbert of Prussia, who had spent some time in England studying our methods of naval administration. To him and two others, Duckwitz and Brome by name, was entrusted the task of organising the new force, and they immediately set about placing it upon a firm footing; but the obstacle which had been fatal to the ambitions of Frederick William was destined to prove no less inimical to those of Prince Adalbert. Of enthusiasm there was no lack; of money there was ample; but neither enthusiasm nor money can create that hereditary seafaring spirit and *savoir faire* without which maritime power under the old conditions was impossible; so the expedients of the seventeenth century were again brought into play. Ships were hired or purchased—steamships, sailing ships, and even oared galleys—and officers and

men were hired from France, Belgium, England, and America. Such, in brief, was the first fleet which flew the flag of united Germany.

Its life was short. As in 1690, the established naval powers looked with a jealous eye on the development that even this puny essay for sea-power portended; and England, taking advantage of a hostile act committed in the neighbourhood of Heligoland, then, and until 1890, a British possession, informed the Assembly that the German flag was unknown at sea, and that any vessels bearing it would be liable to be treated as pirates. Whatever opinion we may hold as to this strange action, the memory of which still rankles in the breasts of thousands of Germans to-day, its effect was immediate. The Imperial Fleet was withdrawn to its harbours, and in 1852—but four years after its inception—was dissolved. The best of the ships were purchased by an English steamship company, and the remainder were disposed of at Hamburg in March, 1853, under the hammer of an auctioneer named Fischer.

But if the Imperial Fleet had vanished, the spirit which produced it remained. Prince Adalbert of Prussia, on finding his work thus reduced to naught, turned his attention to a field in which his efforts, if more limited, were destined ultimately to lead a united Germany into the front rank of the naval powers of the world. A Prussian contingent had, of course, formed part of the Imperial Navy of 1848–52, and to the development of this Prince Adalbert now directed his undivided attention. Seeing clearly where Prussian weakness lay, he built schools for the instruction of seamen and cadets, enlarged and developed the dockyards and arsenals, and encouraged the growth of the mercantile marine in every possible way. He was, however, extremely unfortunate in having

no men with sea experience or knowledge of the conditions of naval war to whom he could turn for advice; so that when he desired to appoint a commission to inquire into and report upon the naval needs of the country, he was perforce obliged to nominate military men to sit upon it. The result was what might have been expected in a nation whose history and traditions were wholly those of land campaigns. Jealousy of a new force competing with them for the honour of defending the country may have counted for something; but it was only natural in the circumstances that army officers should regard the navy as merely a very subordinate auxiliary to their own arm. That a Prussian fleet could ever have an opportunity of filling an offensive *rôle* never occurred to them, and the effect of their report was to condemn it to a narrow defensive which for thirty years pressed with crushing weight upon its development, prevented the accretion of that *esprit de corps* that is so indispensable to such a force as a navy, and effectually obscured from the sight of Germany the vital part which sea-power must play in her imperial and commercial development. In their report the Commission asked for the construction of forty gunboats for the protection of the coast towns, and to assist the land batteries in defending the country against oversea raids and invasion. This stultifying spirit of tying the fleet to the coast and treating it as but an auxiliary to the land forces, lasted in Germany as long as the military element predominated in the Imperial Councils. Not until the accession of Wilhelm II was the voice of statesmen heard above that of the soldiers.

In its early days the principal ports of the Prussian Navy were Stettin and Dantzig; but in 1853 the King of Prussia was able to put into effect one of the dreams



of the Great Elector. Frederick William had sought to obtain a footing for his fleet outside the Baltic—fruitlessly, as it turned out—and now, in return for a payment of five hundred thousand thalers (£75,000) and a promise to protect the maritime trade of the Duchy, the Grand Duke of Oldenburg ceded to Prussia a tract of land five square miles in extent on the western side of the Bay of Jahde. On this spot now stands the great shipbuilding yard of Wilhelmshaven, Germany's principal naval port on the North Sea, second only in point of size, and superior in potential importance, to Kiel itself. Great natural difficulties had to be overcome in the construction of the dockyard, and had Bismarck had his way, it would have been abandoned, even after four or five millions sterling had been spent upon it, in favour of Geestemünde, at the mouth of the Weser. The work was commenced in 1856 and completed in 1869; and to-day the port is, from the military point of view, the most important which Germany possesses.

Under the direction of Prince Adalbert great improvements were made in the methods of naval administration. In 1859 he was appointed Inspector-General of the Navy; and two years later the Admiralty was abolished and the Ministry of Marine, with General von Roon at its head, established in its place. This arrangement lasted but a short while—which perhaps was inevitable, seeing the troublous times the German states were experiencing—and after the war of 1866 the Prussian Navy became the navy of the North German Bund, with the King of Prussia as supreme commander in peace and war. In the several wars immediately preceding the final confederation of the German Empire the Navy took but little part. It was still confined to the passive, soul-destroying duty of coast defence, and its chief occupation in the war of 1870

consisted in lying behind submarine mine-fields waiting for the French ships to attack them and get blown up—which they never did.

During this period, however, a revolution had been in progress which was to solve once and for all the great problem which would-be founders of a German national navy had hitherto found insuperable. The military commission which Prince Adalbert in 1849 had appointed to report on the naval needs of Prussia had absolutely excluded steamships from its recommendations; but scientific progress could not be retarded, and in the adoption of steam Germany at last saw the answer to the great question which for nearly two centuries had held her back from the sea. Lack of men bred to the sea could no longer stultify her oceanic development, for the passing of the sailing ship meant also the passing of the sailor, and the substitution in his stead of the artisan, the mechanic, the stoker, and the electrician. Of such men there was no lack in Germany, and the fleet which in former days had been manned with an assortment of men of all nations but Germany, constituting a force at best incoherent, untrustworthy, and, owing to differences of language, undisciplined, now became a truly national force in every sense of the word. On the *matériel* side Germany could only profit by the new order of things. The first iron ship constructed in Germany—a dredging barge—had been built in 1841 by Ferdinand Schichau at Elbing, where now stands one of the most famous torpedo-boat yards in the world; and as the application of iron and steel to shipbuilding became more general, so Germany's natural advantages in this respect made her subsequent development as a maritime Power—both commercial and military—more and more certain. The

Hamburg-Amerika Steamship Line was established—with three sailing ships—on May 27, 1847, laying the foundations of that great mercantile marine which alone would justify Germany's naval development, and which, twenty years later, had already attained to such dimensions that a German "Lloyd" was established, under the presidency of August Behn, for the classification of shipping. While the advent of steam ensured a national *personnel*, the use of steel in the construction of ships came as a godsend to Germany, with her great mineral wealth and the natural mechanical aptitude of her people,[1] and although in its early days the Imperial German Fleet was a production in which most of the European Powers and America had a hand in some way or another, by the end of the seventies of last century it had become an absolutely self-contained national force. The substitution of science for art as the ruling power at sea was Germany's salvation.

After the Franco-German War and the death, in 1873, of Prince Adalbert of Prussia, the administration of the Imperial German Navy was entrusted successively to Lieut.-General von Stosch and, in 1883, General von Caprivi. Each of these officers paid extraordinary attention to the production of a trained *personnel*. A contemporary account,[2] speaking of Caprivi, says: "He introduced a system which enables Germany to commission her ships with greater promptitude than any other power. He formed the Training Squadron, which, as a practical school for seamen, has no rival save our own training squadron.

[1] There are many people in Germany to-day who claim that since steel is now the most important element in naval *matériel*, supremacy at sea must ultimately pass from England, whose output is now exceeded by both Germany and the United States.

[2] The *Times*, October 15, 1888.

He created the Cruising Squadron, which rendered it possible for Germany to dream of founding a colonial empire. Finally, he raised the German fleet to such a wonderful pitch of effectiveness that during this summer's manœuvres, although a considerable number of ships of all kinds was engaged in operations for a period of nearly four months, there was not a single breakdown of any kind. When we recollect how numerous were the mishaps in the British and French Evolutionary Squadrons of the present year, this absolute immunity of the German vessels from disaster becomes very significant."

On the subject of the efficiency of German officers and men the writer was not less emphatic.

"At this moment," he wrote, "there is no navy which is better officered or better manned than the German. The officers are, almost without exception, men of high scientific attainments, first-rate seamen, and magnificent disciplinarians. The men are models of smartness, and, although the majority of them are inland born, they are in all respects as good sailors as our own bluejackets. No one who has seen anything of work as it is performed in British and German men-of-war can doubt this. Indeed, in the matter of smartness, an unprejudiced critic would probably award the superiority to the German tars."[1]

These extracts are not quoted as matters of merely historical interest. When the relative strength of British

[1] The *personnel* of the German Navy is steadily increasing. There are now on the active list 5 admirals, 11 vice-admirals, 18 rear-admirals (a total of 34 flag officers); 72 captains, 32 frigate-captains, 132 corvette-captains, 387 captain-lieutenants, 798 lieutenants, 417 midshipmen, and 193 naval cadets. There are, further, 2 retired rear-admirals, 10 retired captains, 19 retired frigate- and corvette-captains, and 7 retired captain-lieutenants employed on special duties, while 45 captain-lieutenants and 81 lieutenants

and foreign fleets is under discussion it is no unusual thing for those who defend the relative decline which in recent years the British Navy has suffered to fall back upon the superiority of the British *personnel.* Now, the British

are employed in ordnance and torpedo duties in the various dockyards and coast stations. The total number of commissioned officers of the military branch actively employed is thus 1640, as against 1470 last year. The *personnel* of all ranks comprises the following :—

Personnel.	Officers.	Non-Commissioned Officers and Seamen.				Total all ranks, 1907.	Increase compared with 1906.
		Warrant Officers.	Petty Officers.	Seamen.	Boys.		
Naval Officers . .	1587	—	—	—	—	1587	76
Junior Executive Officers	—	—	378	175	—	553	—
Engineer Officers .	295	—	—	—	—	295	26
Seamen, Boys, Dockyard and Torpedo Divisions .	—	1607	8002	26,809	1500	37,918	2740
Seamen Artillery .	—	69	415	2781	—	3265	330
Marine Infantry . .	50	—	191	1038	—	1279	5
Personnel of the Clothing Department	—	—	25	200	—	225	—
Medical Department .	234	—	199	273	—	706	42
Artillery Administration . .	78	103	60	—	—	241	12
Torpedo *Personnel* (Technical and Administrative) .	49	112	48	—	—	209	10
Mining *Personnel* (Technical and Administrative) .	22	35	55	—	—	112	20
Accountant Department . .	—	79	206	44	—	329	12
Surveying . . .	—	28	—	—	—	28	—
Total . .	2315	2033	9579	31,320	1500	46,747	3273
		44,432					

To which have to be added 203 paymasters, not included in the above, bringing the grand total up to 46,950—a total increase compared with 1906 of 3296.

By 1920 there are to be added to the list 2 admirals or vice-admirals, 7 rear-admirals, 49 captains, 95 frigate- and corvette-captains, 262 captain-lieutenants, and 1448 lieutenants, raising the number of commissioned officers of the military branch to 2,520.

Navy is a venerable institution; the German is not yet forty years old. Which is likely to have made the more progress since 1888? We know that in our own fleet immense strides have been made; but there is nothing whatever to show that German progress has not been at least as great, and the likelihood is that, since in the naval administration of that country there are no vested historical and sentimental interests and obstacles to overcome, it has been greater. The matter must necessarily be put in this abstract and argumentative form, since the prime test of naval efficiency—gunnery—cannot be applied. Not even the British Naval Intelligence Department knows the gunnery returns of the German Active Battle Fleet, and all efforts to discount its value on *personnel* grounds are therefore based upon mere conjecture. On the other hand, two officers of our own fleet who are closely acquainted with the state of the German Navy —one of them, too, disposed rather to minimise than to exaggerate its strength—have informed the writer in identical phraseology that "it is impossible to overrate the individual efficiency of the German ships." The superiority of the British seaman is a tradition handed down from the days of Drake and Nelson. To the men who shattered the Armada every Spaniard was a "dog"; and Nelson has left it on record that he always found one Englishman equal to three Frenchmen. No doubt there was some real ground for the spirit which these things breathe, for in those days the "sea sense" was the prime factor and naturally was most highly developed in an island race. But science has displaced the instinct of the sea, and Germany is to-day by far the most scientific nation in the world.

This is somewhat of a digression from the main theme

of this chapter, but the opportunity was a favourable one for correcting a popular delusion.

Successful as were these two army officers in the creation and perfection of a naval *personnel*, their *matériel* efforts did not end so happily. After the campaign of Sadowa, Bismarck, bringing his genius of statesmanship to bear on the question of naval defence, drew up a plan for the construction of a sea-going fleet of twenty-one battleships and twenty armoured "frigates"; and so far as the inadequate shipbuilding resources at the disposal of the Government would allow, the programme was carried out. With the return of soldiers to the direction of the navy, however, the old ideas reappeared. Von Stosch had no conception of a fleet other than as a collection of floating forts to be placed at the estuaries of the rivers on which stood the rising commercial centres of Germany. This utterly false idea was continued during the administration of Von Caprivi, although under him it took a more generally useful line. The construction of large sea-going ships was almost suspended during his term of office, and the invention of the Schwartzkopf torpedo gave him a new weapon with which he could arm the small ships which, for the *rôle* of coast defence to which he confined the fleet, were all that were required. The torpedo-boat became the especial pet of the General, and he made of the German flotilla a most formidable and well-organised force. He created a special department for the supervision of the new arm, and called to its head Captain Tirpitz, destined before many years were over to be himself in Caprivi's shoes.

Von Caprivi's ideas found small favour amongst the sea officers of his day, who little relished the subordinate position to which his essentially military views condemned

them. He looked upon the navy as a force whose only business was to guard the army's rear and flanks while it conducted its trans-frontier campaigns, and all he provided—ample, indeed, for the purpose—were gunboats, torpedo-craft, and small fast cruisers. In vain a "syndicate of discontent" pointed out that it was a policy as absurd as endeavouring to conduct a land campaign with an army consisting only of light cavalry; in vain were protests raised by the most experienced officers afloat, by Prince Henry of Prussia, by the Emperors themselves. Caprivi's mind was wholly imbued with the land spirit, and nothing could change it. Not until the accession of Wilhelm II in June, 1888, was the German Navy finally liberated from the toils of subordination to the army; but when that event, momentous for the world as for Germany, occurred, it burst its chains with so much violence that in the short space of twenty years it has achieved such strength as dangerously to monopolise the attention of the British nation. The equally remarkable —and less easily explicable—rise of the United States Navy, the overwhelming preponderance of Japanese strength in the Pacific, the sinking of the French Navy into the choking mire of Socialism—these things we see, but do not perceive. The German nation is rich and powerful; German policy is steadfast and aggressive; the German Fleet is concentrated at our very gates. Other phenomena there may be; but this alone we see and understand.

II

THE DEVELOPMENT OF GERMAN SEA-POWER

WITH the accession of Wilhelm II the German Navy entered upon a new era. From his youth the Emperor had taken a great interest in naval affairs. William IV, our own "Sailor Prince," had presented to his great-grandfather a model frigate, the *Royal Louise*, a sister ship to the *Royal Adelaide*, which so many of our young princes have manœuvred on Virginia Water, and during his boyhood Wilhelm II might often have been seen sailing this craft on the ornamental lake at Potsdam. The seed thus sown rapidly developed. Before his accession he had studied very closely the naval position of Germany, spending much time in the dockyards at Kiel and Wilhelmshaven and in conversation with naval officers of high rank. Taking a wider view of things than the military administrators of the navy had been able to do, he reached the conclusion that the German Navy must not be a merely defensive or secondary force in the Imperial armaments, but that the Empire should be able in case of need to pursue a strong offensive policy at sea. Already the national mercantile marine had risen from the small beginnings recorded in the last chapter to the third place amongst the trading Powers of the world, and the Emperor clearly saw the futility of endeavouring to defend it by coast-defence gunboats, and torpedo craft. He saw, too,

the root of the misguided policy which had stunted the naval growth of Germany ever since its inception; and one of the first things he did after his accession was to clear the military element out of the administrative offices of the navy. General von Caprivi was relieved at the Admiralty by Vice-Admiral Count von Monts. For the first time a sailor was at the head of the Imperial Navy.

Von Monts did not hold his office long, for death cut him off only a few weeks after his appointment. He was succeeded by Admiral Hollman. By a Cabinet order of March 30, 1889, the administration of the navy was wholly reorganised. The chief command was separated from the administration, and the latter transferred to the Reichsmarinearnt, having at its head, under the Chancellor, the naval Secretary of State. A Naval General Staff was created, with Admiral von der Goltz at its head; and when these and other improvements in organisation and administration had been set in smooth motion the Emperor turned his indomitable energies towards securing for his Empire a fleet which should give to it a respectable position upon the high seas. A new spirit began to pervade the naval service—a spirit which scorned the coast-defence *rôle* to which successive generations of soldiers had condemned it; and although there was as yet no thought of competing with the maritime strength of England or France, it was determined that Germany should be superior to any of the second-rate naval Powers—Russia, Italy, Austria, or Spain. To this end, Admiral Hollman was entrusted with a Bill in the Reichstag demanding a grant of £10,000,000 for the construction of ten sea-going ironclads, twelve ironclad gunboats, and a number of smaller craft; but the deputies, still in the slough of military

preponderance, offered an energetic opposition to the proposals. Many and bitter were the debates in the Reichstag; but all the eloquence of the Kaiser's representatives only succeeded in extracting permission for the construction of five battleships and three small cruisers.

Long before the unwilling Reichstag had assented to this compromise the Emperor had perceived that nothing could be done unless he could create an educated public opinion in his support. Before he had been three years on the throne torpedo-boats were making periodical visits up the rivers to bring the fleet in being under the eyes of the inhabitants of the inland towns; lecturers, with models of warships and comparative tables, showing at once Germany's inferiority in numbers and in the strength of her individual ships, were speaking daily in scores of towns to thousands of people who, till then, had no idea of what warships were like or why Germany needed them. More effective than all, he secured the services of a number of professional writers who day after day enlarged in the columns of the Press upon Germany's naval needs and Germany's naval weakness. Gradually the new horizon opened out before the eyes of the people—a horizon bright with a future of a colonial empire, a flourishing mercantile marine, and an established position in the very front rank of the naval powers of the world.

The methods, like the ideas, were new to Germany, but the inflexible determination of the Kaiser and the marvellous energy with which he pursued his ends have produced results which ten years ago no one thought possible. The growth of the German Navy has kept pace with the education and growth of popular opinion; and

after the formation of the Deutscher Flotten Verein (Navy League) on April 30, 1898, it is a very simple matter to trace their common progress. A year before, in 1897, Admiral Hollman, broken by his failure to induce the Reichstag to accept the Emperor's naval Bill, had retired, and Rear-Admiral Tirpitz (now Admiral von Tirpitz), who had had direction of the torpedo department under von Caprivi, was called to take his place. No better choice could have been made. Not only was his oratory of the highest order, carrying the deputies before it by its frankness and air of command, but he pressed even further than the Emperor himself the methods by which it was hoped to convert public opinion to their side. Before he had been in office twelve months he had persuaded the Reichstag to accept a Bill providing that the navy should be enlarged in such a way that by 1903 it should consist of nineteen battleships, eight coast-defence vessels, twelve armoured cruisers, and thirty protected cruisers. It further laid down that battleships and coast-defence vessels should be discarded after twenty-five years, armoured cruisers after twenty years, protected cruisers after fifteen years, and torpedo craft after twelve years, and that at the expiration of these periods the discarded vessels should be replaced by new ones. It was a great triumph for the new minister; but greater things were at hand.

The Navy League, founded, as has been said, in April, 1898, made at first but slow progress. At the end of the first year of its existence it could boast only 835 members; and things went on in this unexciting fashion until there came an event which not only gave the League a tremendous impetus, but completely changed its character. Before the outbreak of the South African War its methods had been mild, peaceful, and in every way unexception-

able; but from that time, stung into the offensive by the bitter reproaches hurled at the nation by the Kaiser, it became bellicose and aggressive. Until 1899 no one in Germany, not even the most ardent seekers after sea-power, had dreamed of the possibility of their country rising much above the level of the second-rate naval Powers; but from that time onwards England has been the only nation with which comparisons have been made. The *volte face* was made with startling rapidity. Hostilities in South Africa commenced on October 11, 1899, and a week later the Kaiser in an impassioned speech made the declaration which ever since has been the groundwork of the Navy League's agitation. "We are in bitter need of a strong German navy," he said. "If the increases demanded during the first years of my reign had not been continuously refused to me in spite of my continued entreaties and warnings, how differently should we now be able to further our flourishing commerce and our interests oversea!" England's hands were full, and Germany, for lack of a fleet, had to stand and look idly on. The position was as galling as the Kaiser's words were significant.

The effect of this outburst was magical. It breathed new fire into the Navy League, which entered upon a new campaign with all the advantages of the offensive, and with the newly discovered argument that the British Navy existed for no other reason than to crush Germany's maritime ambitions as she had crushed them fifty years before. Within a brief space the membership of the League had risen to over 200,000, and on the great wave of public opinion which this figure represented the Navy Bill of 1900 was successfully piloted through the Reichstag and became law. According to this programme, which, of course,

superseded the Act of 1898, the German Fleet was to consist by 1920 of—

38 Battleships;
14 Armoured Cruisers;
34 Protected Cruisers, and
96 Torpedo-boat Destroyers.

This force was to be organised on the following lines. In home waters were to be concentrated two double squadrons of 17 battleships each; to each of these double squadrons were to be attached 4 armoured and 12 protected cruisers, and 40 destroyers; while the 4 remaining battleships, with 3 armoured cruisers and 16 destroyers, were to be held in reserve. For foreign service were told off 3 armoured cruisers and 10 protected cruisers. The force provided by the Act of two years before was more than doubled.

No less striking than the great augmentation of strength thus foreshadowed was the policy which was enunciated in the famous preamble of the Bill. This preamble has been often quoted and often commented upon, but its real meaning has never yet been thoroughly grasped. The essential portion runs as follows:—

"Under existing circumstances, in order to protect Germany's sea trade and colonies, there is one means only, viz., Germany must have a fleet of such strength that, even for the mightiest naval Power, a war with her would involve such risks as to jeopardise its own supremacy. For this purpose it is not absolutely necessary that the German fleet should be as strong as that of the greatest sea-power, because, generally, the greatest sea-power will not be in a position to concentrate all its forces against us. But even if it should succeed in con-

fronting us in superior force, the enemy would be so considerably weakened in overcoming the resistance of a strong German fleet that, notwithstanding a victory gained, the enemy's supremacy would not at first be secured any longer by a sufficient fleet."

It is not yet generally recognised that this is a direct attack upon the standard of strength which for at least thirty years has been accepted by all political parties in England as the *minimum* consistent with our security. This standard lays it down that the British Navy should be equal to a combination of any other two Powers, with a margin of 10 per cent for eventualities; but the above quotation from the preamble to the Navy Bill of 1900 demonstrates very clearly that Germany is bent upon the acquisition of such a fleet as, combined with that of some other nation, shall be superior to that of Great Britain. The reasoning is simple. In any conflict of naval forces, where they are so equally matched in *personnel* as those of England and Germany, it is reasonable to expect that the material loss on both sides will be fairly balanced. If, therefore, a British naval force in superior strength fell in with the whole German Fleet and destroyed it, the likelihood is that at least an equal amount of British strength would be lost in the conflict. That being so, it is—or was in 1900; she is not so modest now—Germany's ambition to make her fleet so strong that after its destruction the British Navy would be at the mercy of some other single Power; or, in other words, so strong that a combination with some other Power would create a naval force superior to that of England.

How far Germany has already advanced towards achieving this end is a matter that must be reserved for discussion in a later chapter; but there are many signs

that she will not be content with this policy, depending as it does so largely upon a third Power. In 1900 the Reichstag had struck out from the original Bill as presented six armoured and seven protected cruisers; but in 1906 the former were reinstated in the programme, and in place of the smaller vessels a grant was obtained for the construction of seven new divisions of torpedo-boat destroyers —forty-two boats in all. In the autumn of last year (1907), a further amendment to the Navy Act of 1900 was presented to and accepted by the Reichstag. Under this amendment, the numerical strength of the navy in armoured ships is in no way modified, but its actual fighting power is considerably increased. Under the previous Act and amendment the number of large armoured ships to be laid down in 1908–11 was fixed at three annually, comprising two battleships of an improved Dreadnought type, and one large armoured cruiser, except in 1911, when one battleship and two cruisers were to have been commenced. These programmes, however, were based upon the age limit of twenty-five years which had been laid down in the Act of 1900. The amendment of last year has reduced this to twenty years, with the result that German programmes for the next four years will show a considerable expansion on what was originally intended. Instead of three large ships a year, Germany will lay down four—the number which, in 1905, the British Admiralty declared to be necessary for the maintenance of our position at sea. Since 1905, however, instead of laying down twelve armoured ships, we have commenced only nine.

The effect of the latest amendment to the Navy Act of 1900 has been considerably exaggerated in this country. True, it will give Germany four more armoured ships by

1914 than she would have had otherwise, but it leaves her numerical strength in 1920—when the Act expires—unchanged. It will, nevertheless, add to the strength of her fleet by replacing old ships at an earlier stage. Thus, under the original Act, the five battleships of the *Kaiser* class, which were laid down in 1895–8, would still have three years to six years to run in 1917; whereas under the twenty-year limit they will be replaced by battleships of the latest type in 1915–18. Provision was also made in the amendment of last year for the construction of a submarine flotilla.

It is universally recognised, however, that a further programme of expansion will be entered upon during the next three or four years. It is, in the first place, unlikely that after building four armoured ships a year in the period 1908–11, Germany would willingly reduce her output to the two ships provided for annually in the period 1912–17 (three in 1912) by the Act of 1900; and in the second place, the ever-growing strength of the Flotten Verein and the increasing fervour and extent of its demands, lend every appearance of probability to the suggestion that before another five years are out Germany will enter on an avowed effort to attain equality with England in the latest types of vessels of war.

All that she needs for her purpose is a sufficient force of public opinion, and that force the Navy League is daily strengthening. When the Navy Act of 1900 was presented the League numbered 246,967 members; but the new attitude of competition with England appealed so strongly to Germany, and was maintained so energetically by the League in its propaganda, that by the end of another year its membership had increased to 566,848. In 1902 the first whispers of a British fleet for the North

Sea began to circulate, and the League took full advantage of its opportunity. Millions of pamphlets were printed and hundreds of lectures delivered from end to end of the Empire, pointing out the menace to German security which this new move involved. England's sole aim was declared to be the extermination of the Imperial Navy before it had reached formidable proportions, and she was bringing a fleet into the North Sea in order that she might be able to fall swiftly and suddenly upon the feeble fleet of the Fatherland. The actual establishment of the Home Fleet at the Nore in the beginning of 1907 gave a further impetus to this campaign, so that at the last annual meeting the League was able to boast a membership only a few thousands short of a million.

It is impossible to exaggerate the significance of these figures, especially when contrasted with the paltry 20,000 members which the British Navy League has on its rolls. They indicate a nation absolutely determined upon the acquisition of sea-power at all costs. When the Emperor Wilhelm II ascended the throne he found a people utterly ignorant of everything connected with the sea; in the ten brief years of its existence the Flotten Verein has not only instructed them in naval history and in the peculiarities of the various classes of ships of which a war fleet is composed, but it has convinced the entire nation that if Germany's development is to proceed unobstructed along the lines it has followed since 1871, a fleet "capable of meeting the most dangerous enemy possible" is absolutely essential.[1] The "menace" of British naval supremacy has become the recognised lever for the augmentation of the German Fleet, and its constant reiteration in countless speeches, pamphlets, and newspaper articles has

[1] Tirpitz, in the Reichstag, 1900.

created a volume of public opinion, which, as history repeatedly shows, is liable at the slightest provocation to get out of hand. There is little reassurance to be gathered from the reflection that the German Navy League is largely inspired by the Imperial Government. All is fair, of course, in war, even in the bloodless naval struggle in which for two decades the Western Powers have been engaged: but public opinion is a dangerous toy, and it behoves Germany to be careful lest she should convince England, as well as herself, that her aim is by a sudden and unexpected stroke to get possession of the trident of absolute maritime supremacy.[1] That England will be convinced sooner or later is certain; and the Mistress of the Seas would have an easier task to assert her supremacy before 1920 than she will have after.

It is not as though the anti-English spirit were confined to the declarations of Imperial statesmen, or to the semi-official publications of the Navy League, or to "inspired" writings in the Press. It has penetrated every school of German political thought, so that even one of the best-known leaders of the Socialist party told the present writer not long since that "seeing the phenomenal rate at which her maritime interests were increasing Germany could not any longer allow her position at sea to depend upon the goodwill of England." The late Karl Blind wrote only two years ago that "if a Republic were established in the Fatherland her naval policy would still have to remain the same"; and in December, 1899, when Anglophobia was at its height, the *Sozialistische Monat-*

[1] Speaking at Cologne, April 4, 1897, the Kaiser said: "Neptune with the trident is a symbol for us that we have new tasks to fulfil since the Empire has been welded together. Everywhere we have to protect German citizens; everywhere we have to maintain German honour. That trident must be in our hands."

shefte, the organ of the German Labour Party, expressed its ideals in the following terms:—

"That Germany be armed to the teeth, possessing a strong fleet, is of the utmost importance to working men. What damages our exports damages them also, and working men have the most pressing interest in securing prosperity for our export trade, be it even by force of arms. Owing to her development Germany may perhaps be obliged to maintain her position sword in hand. Only he who is under the protection of his guns can dominate the markets, and in the fight for markets German workers may come before the alternative either of perishing or of forcing their entrance at the sword's point."

The lesson went home; and to-day scores of Labour organisations subscribe to the funds of the Navy League.

Between these extremes of Imperialism and Socialism stands the Liberal party; but on the question of naval policy it differs not a hair's-breadth from them. At the party congress in October, 1903, Herr Basserman, its leader in the Reichstag, said: "In our attitude towards England we must keep cool. Until we have a strong fleet it would be a mistake to allow ourselves to be drawn into a hostile policy towards her." The significance of the phrase, "until we have a strong fleet," cannot be misinterpreted; it compares well with the Kaiser's lament of October, 1899, quoted on a previous page; "I dare not" must wait upon "I would."

The adolescent maritime instinct and ambitions of Germany have been fed by innumerable books in which the main theme has been a war with England. These works range from the wholly fanciful and impossible stories of the type of *Die Abrechnung mit England*, in which the German Navy successively destroys the fleets of Japan,

England, and the United States, appropriating all our colonies as indemnity, to the more solid works of retired officers of the Imperial Navy. Typical of these is one by Admiral von der Goltz, a former chief of the Naval General Staff, and one of the most effective of the Kaiser's literary hacks. It will not be without interest to make a few extracts from it.

"Let us consider," he says, "the case of a war against England. In spite of what many people think, there is nothing improbable in such a war, owing to the animosity which exists in our country towards England, and, on the other side, to the sentiments of the British nation towards all continental Powers, and in particular against Germany. These are not Chauvinistic exaggerations, but the opinion of the whole of the people of Great Britain, who are jealous of our commercial development. If England should ever lose her mercantile supremacy on the seas the decline of her naval dominion would be only a question of time, and she realises the fact instinctively. Of course, the British Government will make every effort to prevent the violent explosion of these sentiments, preferring peaceful competition to war. But how long can that last? Violence becomes a right to a people which fears for its existence.

"The opinion is generally held in this country that any resistance against England at sea would be impossible, and that all our naval preparations are but wasted efforts. It is time that this childish fear, which would put a stop to all our progress, should be pulled up by the roots and destroyed.

"At this moment [1900] we are almost defenceless against England at sea, but already we possess the beginnings of a weapon which statesmanship can put to a good

use, and our chances of success in a war against England grow more favourable day by day. The maritime superiority of Great Britain, overwhelming now, will certainly remain considerable in the future; but she is compelled to scatter her forces all over the world. In the event of war in home waters, the greater part of the foreign squadrons would no doubt be recalled, but that would be a matter of time, and then all the stations over-sea could not be abandoned. On the other hand, the German fleet, though much smaller, can remain concentrated in European waters. With the increases about to be made, it will be in a position to measure its strength with the ordinary British naval forces in home waters [then only the Channel Fleet]; but it should not be forgotten that the question of numbers is far less important at sea than on land. Numerical inferiority can be compensated by efficiency, by excellence of *matériel*, by the capacity and discipline of the men. Careful preparation permitting rapid mobilisation can secure a momentary superiority."

Only eight years have passed since these lines were penned, but they have seen changes of almost unparalleled magnitude in the distribution of naval power. In 1900 the German Navy included only fourteen battleships, while Great Britain possessed forty-seven such vessels. To-day the totals are twenty-four and fifty-three respectively. Our total has increased only 13 per cent to Germany's 71 per cent. On the other hand, however, the distribution of our naval force over the waters of the globe on which Von der Goltz in his writings and the Kaiser in the preamble of the Navy Bill counted so confidently, no longer exists. Save for six battleships in the Mediterranean the whole of our strength in this class of ship is concentrated in home waters; though whether it is better

to have ships in full commission ten thousand miles away or in nucleus commission with untrained crews at the point of danger is, at best, a debatable question. Nevertheless, the agitation which has produced the formidable German Navy of to-day has not been without its effect on British policy and organisation, and it may be doubted whether, on paper at all events, the German Navy is in a more favourable position to-day than she was in 1900 for carrying on a naval campaign against England.

Germany's development is, however, far from having reached finality. The first stage of that development was achieved when Prussia assured her predominance in the federated Empire; the second we see existing to-day, when Germany stands at the head of the commercial and naval Powers of the European continent; and we also see her well launched upon the last stage of her advancement, which will not be achieved until either she is broken, or has attained the foremost position amongst the maritime Powers of the world. Her development is a triumph of man over nature. She has had to fight against obstacles before which any other nation would have acknowledged herself beaten. Her attenuated coasts, her wholly territorial history, the agrarian character of her people—all were against her, and all have been overcome. Her efforts are concentrated to-day upon that which alone can ensure a future development in accordance with her ideals of world-power—the creation of a navy which shall dominate the seas. She has yet far to go; but the essential fact should never be absent from the minds of Englishmen, let *ententes* and arbitrations and Peace Conferences be as numerous as they will. M. Edouard Lockroy, an ex-Minister of the French Marine, has given us a warning which may fittingly be reproduced

here, before we pass to an examination of the actual strength of the German Navy to-day.

"The pretension of Germany to dominate the seas," he has written,[1] "will lead her sooner or later into war with England. That conflict will be one of the most terrible of the twentieth century. What its result will be, none can foretell; but so much is certain, that Germany will have prepared everything that human forethought and the patience and energy of a nation can suggest."

[1] *Lettres sur la Marine Allemande.*

III

THE GERMAN NAVY TO-DAY

I. THE BATTLE FLEET

FROM the very beginnings of its recorded history the physical features of the North Sea have exercised a preponderating influence on the designs of warships built for those nations whose shores are washed wholly or principally by its waters. The North Sea itself is comparatively shallow, and the German, Dutch and Belgian coasts are surrounded by sandy stretches which not only render coast navigation intricate and difficult, but have made the construction and maintenance of naval harbours a task of wearying and unceasing labour and expense. In each of the three great periods into which warship design may be divided we can trace with ease the effect of these obstacles which nature has placed in the path of Germany towards the ocean. The first naval campaign in the North Sea of which we have any detailed record was that undertaken in the eighteenth year of the Christian era by Germanicus against the Bructeri—a people inhabiting the land around the mouth of the Ems. Those were the days of the oared galley, and the following description of the fleet of Germanicus has come down to us:—[1]

[1] *Burchett's Naval History* (1720).

"The fleet he made use of in this expedition consisted of a thousand sail, which he caused to be built on purpose of a peculiar structure, for they were between ships of war and those of burthen, being not so long as the first, and longer than the latter, bellying out in the waste for the greater convenience of stowage; and they were yet more particularly remarkable for having no poop, one end being equally sharp and pointed with the other, with a rudder at both, the reason of which singularity was because of the many turnings and windings of the channels in those parts, and the extreme difficulty of navigation."

This handicap has naturally increased with the growth of the ship, for while more favourably situated nations have been able to avail themselves unhampered of the progress of naval construction, those on the eastern shores of the North Sea have found themselves insuperably limited by their shallow coasts and tortuous channels, the first limiting the draught of their ships, and the second—as a factor of handiness and manœuvring power—their length. By the middle of the seventeenth century the sailing ship had displaced the galley; but the experiences of the Dutch wars showed that however man might plan and progress, nature is inexorable. Time after time the Dutch commanders complained to the States-General that it was impossible for them to meet the English with any prospects of success so long as there were in the English fleet twenty ships better than their best; but the hands of the Dutch constructors were tied by obstacles they could not overcome. The following table, showing the strength of the two navies in the various classes of ships, will show how severely the Dutch felt the handicap imposed on them:—

	Guns. 104–64 (1st rate).[1]	Guns. 66–54 (2nd rate).	Guns. 60–44 (3rd rate).	Guns. 50–28 (4th rate).	Guns. 36–12 (5th rate).
English .	3	11	11	63	35
Dutch .	–	9[2]		108	4

In the wars to which England has in the past been more accustomed than to any others, that is to say, in those with France, where the operations covered a very extensive field, the differences between individual ships might have had—and, indeed, did have—but little influence on the general trend of affairs. During the wars of the French Revolution and Empire, which extended over the East and West Indies, the Mediterranean, the Channel, and the waters of Northern Europe, it was the medium-sized 74-gun ship which carried all before it; but if history counts for anything, there is good ground for the belief that when the operations are confined to a comparatively small area, as they were in the Dutch wars, and as they undoubtedly would be in any conflict between England and Germany, the big ship is a very powerful asset. The geographical position practically necessitates the employment of massed fleets, since the opportunities for strategical dispositions and combinations are necessarily largely restricted; and in any such conflict approaching in nature the furious *mêlées* of the Dutch wars, but with the modifications consequent upon scientific advance, the heavily-armed and armoured battleship, with or without superior speed, is at an obvious advantage over the smaller and less powerful vessel. In the seventeenth

[1] The "rate" applies to the English ships only, and is mentioned only to show how they were then classified. The summary shows how the Dutch fleet stood on March 10, 1654, and the English on December 27, 1653.

[2] The largest ship in the Dutch fleet at this time was the *Brederode*, fifty-six guns.

century, as the above figures show, the English and Dutch fleets were numerically equal. There was nothing to choose between the capabilities of the *personnel*, but England had twenty-five ships of the largest type to only nine of the Dutch, and to them she largely owed her success.

Until 1905 these facts were not realised in Germany; or, if they were realised, it had not been found practicable to interpret them in the design of the ships built for the Imperial Navy, for in that year, although every other naval Power was building vessels of 15,000 or 16,000 tons, and England had jumped to 17,900 with the *Dreadnought*, Germany had not advanced beyond the 13,200 tons of the Deutschland class. The advent of the *Dreadnought*, however, amongst the many things for which it is responsible, has opened the eyes of Germany more effectively than any peace manœuvres or Press campaigns could have done to the *rôle* the big ship must play in the realisation of her maritime ambitions, and already she has begun vigorously to make up the leeway to which two years of indecision and inactivity condemned her.

But the purpose of this and following chapters is to discuss the actual naval strength of Germany to-day, leaving the future to be dealt with later on.

The effective battleship strength of the German fleet comprises twenty-four vessels, none of which is more than seventeen years old, and forming four homogeneous squadrons of five ships each and one of four. The first batch was launched in 1891–2, and consists of the *Brandenburg*, *Kurfürst*, *Friedrich Wilhelm*, *Weissenburg* and *Wörth*. In spite of many alterations, they remain to-day the most unsatisfactory battleships to be found in

any navy in the world. On a displacement of just over 10,000 tons they carry an armament of six 11-in. guns mounted in three barbettes along the centre line, and eight 4·1-in. quick-firing guns, in addition to a number of smaller weapons. The heavy guns in the fore and after barbettes are very weak, having only one-third of the penetrating power of modern weapons of the same calibre, while the two amidships, being hampered by lack of space, are therefore shorter and much less powerful. It was at one time proposed to remove the centre barbette and to replace it by a battery of quick-firing guns—a change that would have added considerably to the fighting value of the ships, since the small arc of fire available gives the barbette but a very small ratio of efficiency. All that was done, however, was to add two guns to the original six of the secondary armament, and two submerged torpedo tubes, while at the same time (1900–4) the ships were reboilered and their coal capacity increased from 750 to 1050 tons. What little protection there is is fairly good. A complete belt of compound armour, from 12 to 15 in. thick, extends from stem to stern, and the bases of the turrets are protected with 12 in. The eight 4·1-in. quick-firing guns are in a battery only 3 in. in thickness, and, in common with those of many other German ships, are liable to be put out of action by the bursting of a single heavy shell behind the screen. The designed speed of the Brandenburg class is seventeen knots, but fifteen is their utmost limit to-day. Each ship has a complement of 568 men, and cost complete about £750,000.

It will not be without interest to compare these ships side by side with those designed at the same time for the British Navy. Contemporaneous with the Brandenburgs

were the Royal Sovereigns, which compare with them as follows:—

	Royal Sovereign.	*Brandenburg.*
Displacement . .	14,150 tons ...	10,100 tons
Speed (designed) .	17 knots ...	17 knots
Weight of armour .	4600 tons ...	2800 tons
Armament . .	Four 13·5-in. ...	Six 11-in.
	Ten 6-in. ...	Six 4·1-in. (two added)
Broadside . . .	5500 lb. ...	2958 lb.

Three years elapsed between the launching of the last of the Brandenburg class, in 1893, and the first of the new design which followed it. This was the *Kaiser Friedrich III*, of what is known as the Kaiser class, and she was followed by the *Kaiser Wilhelm II* (1897), the *Kaiser Wilhelm der Grosse* and *Kaiser Karl der Grosse* (1899), and the *Kaiser Barbarossa* (1900), the whole forming a perfectly homogeneous squadron of well-armed and formidable ships. There is no likeness whatever between them and the Brandenburg class. The displacement was increased by 1000 tons, and the speed, which the ships can still attain to-day, by a knot, while the distribution of the armour was made to conform more closely to the British practice of protecting heavily the amidships, or vitals, at the expense of the ends. The side above the belt, however, was still left dangerously bare of protection. These ships were amongst the first to be fitted for burning oil fuel, carrying 100 tons in the double bottoms, besides 1050 tons of coal. Each has three sets of machinery, developing an aggregate horse-power of 14,000, while the average cost complete was £963,000.

Compared with the Brandenburg class, however, the strongest point of difference is in the armament. Ignoring the almost universal practice of mounting 12-in. guns as the principal weapons, the new ships were given an armament comprising nothing larger than the 9·4-in. gun,

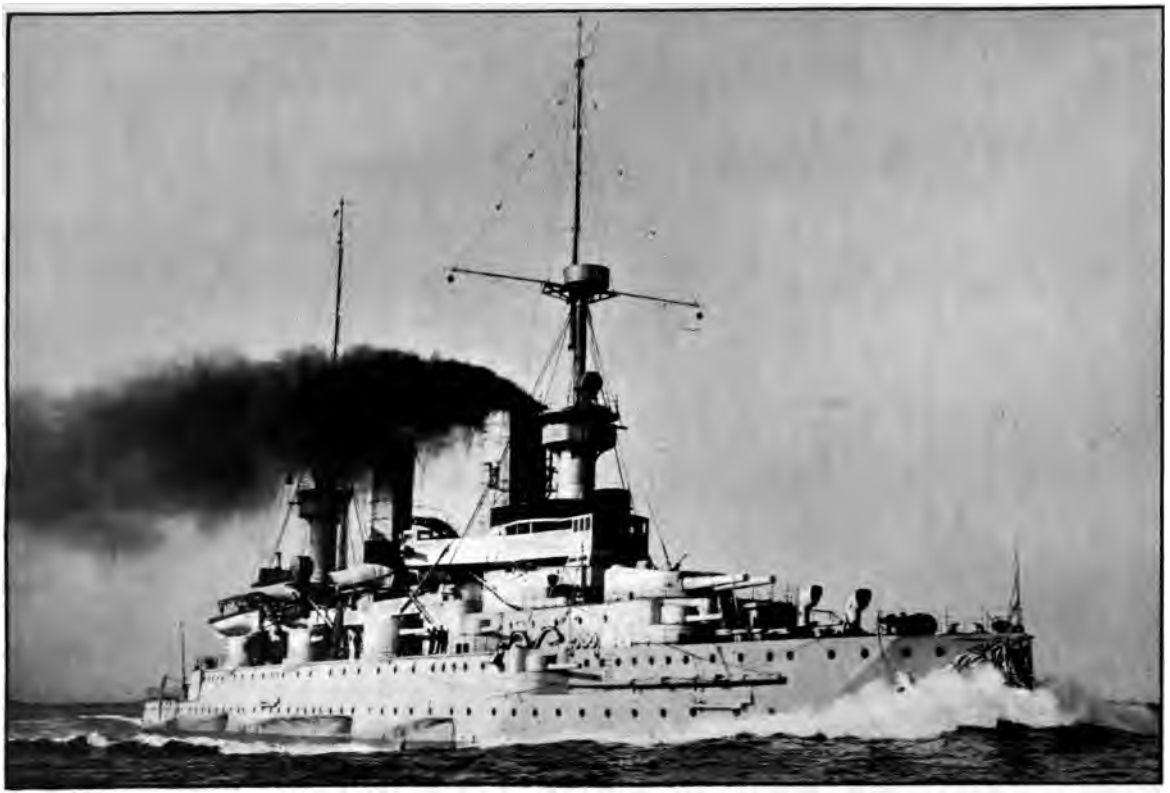


Photo. Renard, Kiel

S.M.S. KAISER WILHELM II. **Battleship**

Displacement : 11,150 tons. Armament : Four 9·4-in., eighteen 6-in.

Sister ships : *K. Friedrich III, K. Wilhelm der Grosse, K. Karl der Grosse, K. Barbarossa*

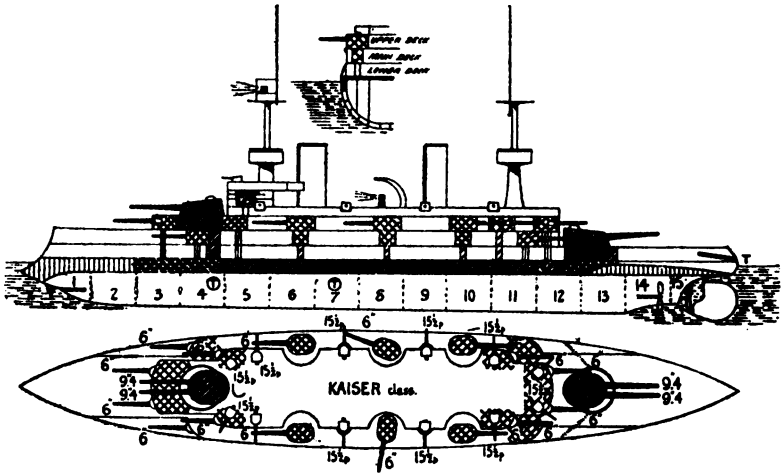
which fires a shot of only 309 lb. against the 850 lb. of the 12-in. weapon; and the fact that eighteen 6-in. guns were mounted while twelve was the number given to British battleships does not by any means restore the balance in favour of the German design. It has been claimed that this absolute adherence to the medium-size gun is an essential part of German naval policy and an established factor in its tactical schemes; but in view of the fact that the 9·4-in. gun disappeared in the designs of 1901 the claim cannot be substantiated. Like the huge protected cruiser of the Powerful type it was more probably due to an immature conception of the function of each part of the naval machine. Just at that period the quick-firing gun was much in vogue, and men were not lacking who declared that the heavy gun must give way before it, just as, twenty years before, the torpedo-boat was heralded as the death-knell of the battleship. Yet to-day the battleship and the 12-in. gun are still with us, and more firmly established than ever, manifesting, in fact, every sign of carrying us to the opposite extreme. There is a definite place and a definite need in the naval economy for the heavy battleship, the light cruiser, and the torpedo-boat, for the 12-in. gun and the small medium quick-firer, a fact which the present inordinate craze for size above everything may obscure but cannot controvert.

There follows a comparison between the *Kaiser Friedrich III* and the British *Canopus* of the same date:—

	Canopus.		*K. Friedrich III.*
Displacement . .	12,950 tons	...	11,150 tons
Speed (designed) .	18·25 knots	...	18 knots
Weight of armour .	3600 tons	...	3800 tons
Armament . .	Four 12-in.	...	Four 9·4-in.
	Twelve 6-in.	...	Eighteen 6-in.
Broadside . .	4000 lb.	...	2038 lb.

The Kaisers are now having their armament reduced by four 6-in. guns in order to raise their foreboard and so improve their sea-going qualities.

Before the last of the Kaisers had left the stocks the five vessels of the succeeding class (*Mecklenburg*, *Schwaben*, *Wettin*, *Wittlesbach*, and *Zähringen*) were well under way. In general features they resemble their immediate pre-



KAISER CLASS
PROFILE AND DECK PLAN
(By kind permission of *Fighting Ships*).

decessors very closely, mounting precisely the same armament, though the 9·4-in. guns are of a later and more powerful type than those in the Kaisers. There was also a very considerable improvement in the disposition of the armour. For the first time in German battleships the side above the water-line belt was protected, 5½ in. of Krupp steel being placed round the battery and lower-deck redoubt, above the 9-in. main belt. A glance at the accompanying plan will show that all these vessels have on

paper a very powerful end-on fire of two 9·4-in. and eight 6-in. guns. In actual practice, however, some discount has to be made from this total, as it is found that it is impossible to work them all in action together, owing to their proximity to each other and the consequent very dangerous blast. When firing dead ahead, the foremost pair of 6-in. guns is out of action for this reason, and the smallest alteration of the ship's course is sufficient to neutralise three on one broadside, although at the same time one or two on the other broadside are brought into action. The fuel supply was increased, in the case of coal to 1400 tons and of oil to 200, while the speed, with an increased horse-power of 15,000, remained the same. These improvements on the Kaiser class, though partly offset by economies in weight in other directions, raised the displacement from 11,150 to 11,830 tons, and the cost to an average of £1,100,000 per ship.

While Germany was building the Wittelsbachs, England was engaged in the construction of the "new Admirals," or Duncan class, the comparison being as follows:—

	Duncan.		*Wittelsbach.*
Displacement . .	14,000 tons	...	11,830 tons
Speed (designed) .	19 knots	...	18 knots
Weight of armour .	3500 tons	...	4000 tons
Armament . .	Four 12-in.	...	Four 9·4-in.
	Twelve 6-in.	...	Eighteen 6-in.
Broadside . .	4000 lb.	...	2038 lb.

Having succeeded, in the Kaiser and Wittelsbach classes, in conforming the system of protection to that applied to ships for the British Navy, Germany now turned her attention to the more vital question of gun-power. We have seen that after the completion of the Brandenburg class in 1893–4 the heavy gun was dropped altogether in German battleship designs, and the deficiency to

a certain extent—though not altogether—made up by the installation of a very numerous quick-firing armament. The relative value of the heavy gun and the rapid-fire weapon is still a very vexed question, in spite of the very decided attitude now taken by the majority of naval Powers in favour of the former. The Dreadnought type of ship, with its armament consisting solely—except for anti-torpedo-boat weapons—of 12-in. guns, represents the triumph of the *matériel* school of naval thought. The battle between the heavy, slow-firing gun and the medium quick-firer is the battle between two schools each of which has a different conception as to the primary factor of naval power. The *matériel* school, those who value ships above everything, put their faith in the heavy gun because it alone can destroy ships; the historical school, convinced by the unchallengeable teaching of history, recognises that the *personnel* is the deciding element, and, while not opposing the mounting of heavy guns, insists upon a good number of quick-firing weapons as the surest means of demoralising the crews of the enemy's ships. The latest war experience upon which we can draw, the conflict between Russia and Japan, shows that the historical school is right. The stories told by men who were in the unfortunate Russian ships demonstrate with graphic certainty the impossibility of maintaining the *morale* of a ship's company under a hail of 6-in. shells; while on the other hand, the *Tsarevitch* received a dozen blows from 12-in. guns without going to the bottom. In the battle of Tsushima, the Russians were superior in heavy guns to the Japanese by forty-five to seventeen, while the Japanese overpowered them in medium quick-firing weapons by 190 to 110. Russian *morale* at the start was bad, but it was not the 12-in. gun that destroyed it, and, with it, the fleet. It is the man behind the gun who is the controlling factor,

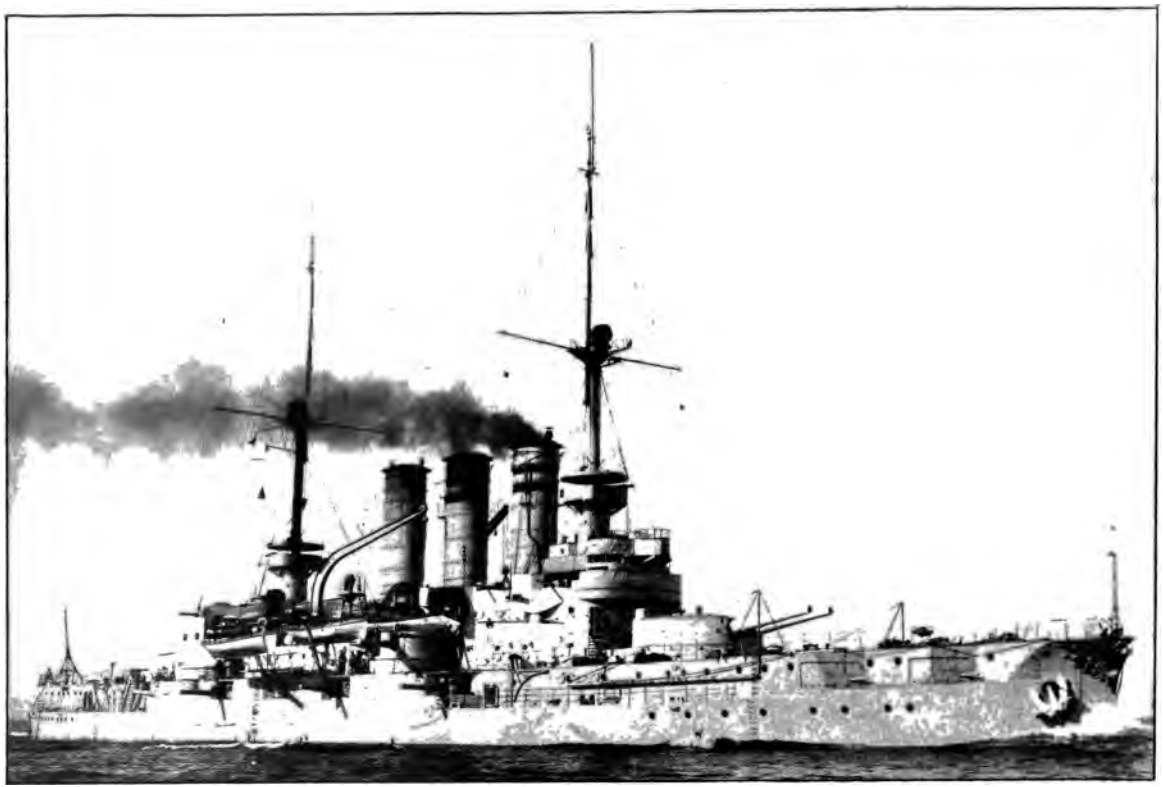


Photo. Renard, Kiel

S.M.S. ELSASS. BATTLESHIP

Displacement: 13,200 tons. Armament: Four 11-in., fourteen 6·7-in.

Sister ships: *Braunschweig*, *Hessen*, *Lothringen*, *Preussen*

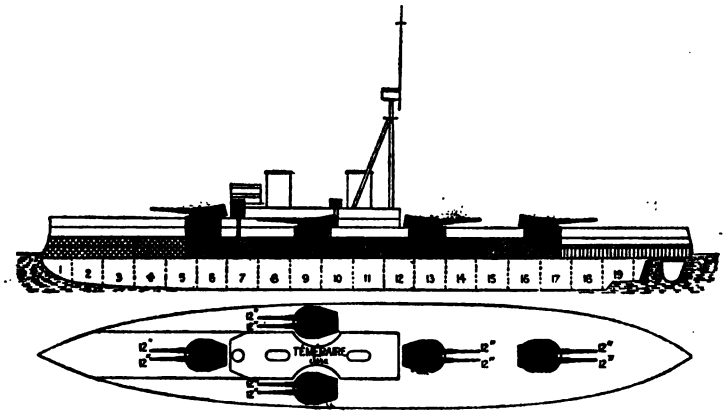
and in destroying his equilibrium the ponderous heavy weapon is comparatively powerless. To pulverise *matériel* is good: it debits the enemy's account; but to demoralise *personnel* is better, since it not only debits the enemy, but credits one's self with the captured shipping.

In her next ships, the Braunschweig class, including, besides the name ship, the *Elsass*, *Lothringen*, *Hessen* and *Preussen*, Germany, as has been said, brought her armaments into line with British designs. Increasing the displacement to 13,200 tons, the new ships were equipped with four guns of 11-in. calibre—quite equal for all-round purposes to the contemporary British 12-in. weapon—and fourteen of 6.7 in. For the first time, German ships, in spite of their smaller size, were superior in gun-power to British ships of the same date, while in the distribution of the armament, those faults which had been discovered in the preceding ships were effectually remedied. This great advance was accompanied by increased protection to the main and secondary guns, while a new anti-torpedo-boat weapon firing a shell of 24 lb. was installed, far superior for its special purpose to the 12-pounders mounted in the *Queen* and *Prince of Wales*. The coal supply was again increased by 200 tons, and the cost to £1,160,000 per ship. The comparison between the *Braunschweig* and the *Queen* shows the fallacy of reckoning fighting power by tonnage.

	Queen.		*Braunschweig.*
Displacement . . .	15,000 tons	...	13,200 tons
Speed (designed) . .	18 knots	...	18 knots
Weight of armour . .	4295 tons	...	4200 tons
Armament . . .	Four 12-in.	...	Four 11-in.
	Twelve 6-in.	...	Fourteen 6·7-in.
Broadside . . .	4000 lb.	...	3304 lb.[1]

[1] The 11-in. gun fires more rapidly than the 12-in., and the shell of the 6·7 weighs 154 lbs. to 100 lbs. for the 6-in., so that after two or three minutes' firing the German ship would be far ahead of the British in weight of metal discharged.

completed for sea. How these ships will affect Germany's naval strength will be discussed in a subsequent chapter, but it will not be without interest briefly to glance at the progress made in England since the first of the latest completed type of German battleship was laid down. This was in November, 1904, and a comparison between it and the contemporary ships of the King Edward VII class has



H.M.S. TÉMÉRAIRE
PROFILE AND DECK PLAN
(By kind permission of *Fighting Ships*).

already been made. So far as completed ships are concerned, Germany has made no progress in the meantime, adding to her fleet only ships of the 1904 design. England, on the other hand, has completed three ships of increased size and novel construction, the *Lord Nelson* and *Agamemnon*, and the *Dreadnought*, while six ships of the same general type as the last named (the *Bellerophon*, *Téméraire*, *Superb*, *Collingwood*, *St. Vincent*, and *Vanguard*) are under construction. The *Lord Nelsons* are, without doubt, the finest completed fighting ships in the world. On

a displacement of 16,500 tons they carry an armament of four 12-in. and ten 9·2-in. guns, giving them a broadside fire of 20,300 lb. in one minute, with a reserve of five 9·2-in. guns on the other broadside. The *Dreadnought*, of 17,900 tons, though undoubtedly a formidable vessel, especially when compared with the 13,200-ton ships of the German Navy, is a long way behind the *Lord Nelson*, the only point in her favour being her speed, which itself is of doubtful value in a battleship. The weight of shot from the *Dreadnought's* broadside in a minute is 12,750 lb., or less than 63 per cent of the *Lord Nelson's*, while in reserve she would have only two 12-in. guns. Further, the *Lord Nelson* is better protected, and cost only £1,605,065, against the *Dreadnought's* £1,813,100.

Although Germany has at present no ship capable of meeting either of these vessels single-handed, she is building four, and commencing three more this year, which are believed to mark a considerable advance on the *Dreadnought*. The details have been kept secret, but their armament is believed to include sixteen 11-in guns, all of which can be brought to bear on either broadside. The *E. Bayern* was launched in March, and the *E. Sachsen* will follow in September next, but none will be ready for service before 1910.

To express naval power in figures is difficult, even impossible, since the deciding element is the *personnel*, and the value of the *personnel* cannot be put into figures. Russian *matériel* in the late war, fleet for fleet, was superior to the Japanese; but nothing could, and nothing ever will, compensate for untrained and incapable *personnel*, no matter what its standard of courage and bravery. The German Navy may be better or worse manned than the British. War alone can answer the question. With these reservations, the battle fleets of England and Germany

may be tabulated and compared as follows, reckoning only completed ships not more than twenty years old.

TABLE SHOWING THE RELATIVE STRENGTHS OF THE BRITISH AND GERMAN BATTLE FLEETS, SHIPS AND GUNS

(Correct for Great Britain till 1909; for Germany till 1910)

Guns.		13·5 in. / 12·0 in. / 10·0 in.	9·2 in.	7·5 in.	6·0 in.	
	British . . .					
	German . . .	11·0 in.	9·4 in.	6·7 in.	5·9 in.	
No. of Ships.	GERMANY.					
4	Brandenburg class .	24	...	...	...	
5	Kaiser ,, .	...	20	...	90	
5	Wittelsbach ,, .	...	20	...	90	
5	Braunschweig ,, .	20	...	70	...	
5[1]	Deutschland ,, .	20	...	70	...	
	GREAT BRITAIN.					
8	Royal Sovereign class	32	...	...	80	
2	Centurion ,,	8	...	...	20	
9	Majestic ,,	36	...	...	108	
6	Albion ,,	24	...	...	72	
8	Formidable ,,	32	...	...	96	
5	Duncan ,,	20	...	...	60	
2	Triumph ,,	8	...	28	...	
8	King Edward VII ,,	32	32	...	80	
1	Dreadnought ,,	10	...	...	...	
2	Lord Nelson ,,	8	20	...	...	Total Guns:
Totals:						
Germany 24	...	64	40	140	180	424
England 51	...	210	52	28	516	806

On either side there is a number of older ships, and, in the case of Germany, of coast-defence vessels. Since all vessels of this description are capable of taking part in operations in such a field as the North Sea, though at the same time not available for the far-flung operations of a naval war of the old type, their force will be found summarised in the Appendix.

[1] Two ships of this class will not be completed until next autumn.

IV

THE GERMAN NAVY TO-DAY

II. CRUISERS AND TORPEDO CRAFT

THE immediate objective of the German Naval General Staff is the destruction of the enemy's battle fleet. Since the great awakening of the Fatherland in 1888, she has never been called upon to face such a division of expert opinion as exists and flourishes in France—one body of thinkers advocating the concentration of attention on crippling the enemy's commerce, another demanding hordes of submarines for the passive defence of coasts. The military teachings of Clausewitz and Von Moltke have been consistently and fearlessly applied to the constitution of the Imperial Navy, and scarcely a single breath has been diverted from the main object in view. To every nation the battleship is the ultimate material dictator of sea-power; but to one situated as Germany is its paramount importance is greatly intensified. Her fight for sea-power will not be a world-wide struggle; it will be one of deadly and bloody concentration, and Germany needs to husband all her available strength in battleships, and to preserve it from that suicidal dispersion which for so many years left England open and almost defenceless to a sudden blow at the heart. When the great Armageddon at last does come, Germany will have little use for the protected cruiser; she will need but a handful for intelligence purposes. She cannot afford to scatter her force for the

protection of her commerce, and she contemns the *guerre de course*, with its attacks upon defenceless merchant shipping. Besides, if she can destroy her enemy's battle fleet, all these things—and who knows what others?—will be added unto her. Battleships and torpedo craft, with a few small, fast-scouting cruisers, should alone compose the German Fleet if her policy is to be perfectly logical and consistent. There is no place in her maritime economy for the hybrid armoured cruiser.

Both in England and France, however, this class of ship has attained a well-established position, and occupies a prominent place both amongst completed ships and in unfinished programmes. It has been said that admiralties are very much like sheep, and certainly it is difficult to ascribe the armoured cruisers in the German Navy to anything but a blind, unreasoning desire to "follow my leader." There are eight already completed, and two under construction. The details of the former are as follow:—

Date of launch.	Name.	Displacement.	Speed. Knots.	Armament.
1897	Fürst Bismarck	10,570 tons	19	Four 9·4-in.; twelve 6-in.
1901	Prinz Heinrich	8759 tons	20	Two 9·4-in.; ten 6-in.
1901	Prinz Adalbert	8858 tons	20	Four 8·2-in.; ten 6-in.
1902	Friedrich Karl	8858 tons	20	
1903	Roon	9350 tons	21	
1904	Yorck	9350 tons	21	
1906	Scharnhorst	11,500 tons	22·5	Eight 8·2-in.; six 6-in.
1906	Gneisenau			

It is not necessary to tabulate here all the British ships of this type in order to show our superiority in them,[1] but it is possible to make some significant summary comparisons. We have thirty-seven armoured cruisers completed,[2] all of which have been built since 1898; and we have one building; and although this type of warship is

[1] A full list will be found in the Appendix.

[2] May, 1908.

regarded by many with considerable disfavour, it cannot be denied that they possess very formidable fighting qualities. An interesting comparison is that between the three new British ships of the Defence class, and the German battleship *Wittelsbach* and the cruiser *Yorck*.

	Defence.	*Wittelsbach.*	*Yorck.*
Displacement	14,600 ...	11,830 ...	9350 tons.
Speed	23 knots ...	18 knots ...	21 knots.
Armour belt	6 in. to 4 in.	9 in. to 4 in. ...	4 in. to 3 in.
Side above belt	3 in. ...	5½ in. ...	4 in.
Armament	Four 9·2-in.	Four 9·4-in. ...	Four 8·2-in.
	Ten 7·5-in....	Eighteen 6-in....	Ten 6-in.
Broadside	2520 lb. ...	2698 lb. ...	1410 lb.

The comparative strength of the two navies in armoured cruisers is shown in the following table :—

RELATIVE STRENGTHS OF THE BRITISH AND GERMAN FLEETS IN ARMOURED CRUISERS, SHIPS AND GUNS

(Correct for both countries until 1911)

Guns.		British German	12 in. 11 in.	9·2 in. 9·4 in.	7·5 in. 6·7 in.	6 in. 6 in. 5·9 in.	
No. of Ships.		GERMANY.					
2		Scharnhorst class	...	16	...	12	
2		Roon ,,	...	8	...	20	
2		Pr. Adalbert ,,	...	8	...	20	
1		Fürst Bismarck	...	4	...	12	
1		Pr. Heinrich	...	2	...	10	
		GREAT BRITAIN.					
3		Inflexible class	24	...	...	...	
3[1]		Defence ,,	...	12	30	...	
4		Warrior ,,	...	24	16	...	
2		Black Prince class	...	12	...	20	
6		Hampshire ,,	...	...	24	36	
4		Drake ,,	...	8	...	64	
6		Cressy ,,	...	12	...	72	
10		Kent ,,	...	...	...	140	
Totals:							Total Guns:
8	Germany	...	...	38	...	74	112
38	England	...	24	68	70	332	494

[1] The *Defence* will not be completed until the end of 1908.

The superiority of the British vessels is very heavily marked, and is considerably emphasised by the fact that the 8·2-in. German gun is the only one capable of penetrating the 6-in. Krupp armour (seven inches in the Inflexibles) with which all our cruisers, with the exception of the Kent class (which have only four), are protected. The Scharnhorsts have a wide belt of six inches thickness, and the *Fürst Bismarck* a very narrow one of eight inches, the remaining five vessels having four inches only. It works out, therefore, to this, that while the British armoured cruisers mount—

494 guns capable of penetrating the armour of the Roons, Prinz Adalberts and *Prinz Heinrich;*

162 capable of penetrating the armour of the Scharnhorsts, and

92 capable of penetrating the armour of the *Fürst Bismarck* at a range of 5,000 yards, the German cruisers mount only the following :—

No guns capable of penetrating the armour of the Inflexibles,

112 capable of penetrating the armour of the Kents, and

38 capable of penetrating the armour of the remainder.

Judged by another factor—that of speed—the German Navy is at an equally great disadvantage, as the following table will show :—

ARMOURED CRUISERS CLASSIFIED ACCORDING TO SPEED

Knots	25	23	22·5	21	20	19
Germany . .	—	—	2	3	2	1
Great Britain	3	23	6	6	—	—

It need hardly be said that in the cruisers provided for in her latest programmes Germany is doing her best to redress this adverse balance. Under the Navy Act and

its various amendments, two armoured cruisers are at present under construction, and one is to be commenced in each of the years 1908, 1909 and 1911. Those at present on the stocks, known as "E" and "F", are building at Kiel and Bremen respectively, and their details have been kept closely secret. The former, however, is of 14,760 tons displacement, and will, it is believed, be armed with ten 11-in. guns, with a speed of 22·5 knots. She was to have been completed in 1909. The "F", designed a year later, is of about 19,000 tons, and will be of the cruiser-Dreadnought type, armed with twelve 11-in. guns, protected by a belt of 8 in. amidships and 6 in. at the ends, and steaming 25·5 knots with turbines of 50,000 horse-power. As late as February of this year the details of both these vessels were "subject to alteration," and it is probable that the particulars of "F", at any rate, when at last they are definitely decided upon, will show her not to be nearly such a formidable ship as the above details would indicate. At any rate, even if they are found to be fairly accurate, the balance of power as between Great Britain and Germany is not likely to be affected very seriously by the appearance of one ship; nor is it conceivable that the British Admiralty would rest long before going as far ahead of "F" as that ship may be of our Inflexibles. According to the figures given above, "F" is about equal to two Inflexibles, but it is extremely improbable that Germany can extract twice the fighting power out of a pound sterling as can Great Britain. "F" is to cost £1,825,000—about a hundred thousand more than the *Inflexible*—and also was to have been completed in 1909. Both this vessel and "E" have, however, been delayed considerably in consequence of the many alterations that have been made in the original designs, and it

is doubtful if either will be fit for the pennant before 1911. Altogether, Germany's experience with armoured cruisers, reckoned either by her present standing in completed ships or by her efforts with those now under construction, cannot be regarded as a very happy one. Her ends would have been better served by putting her energies into battleships. Six or eight inches of armour will not be of very great value in the concentrated Armageddon that is to be.

If Germany must be condemned for having abandoned her own interests to follow the lead of foreign Powers, she must, on the other hand, be given full credit for having avoided the absurdity of the huge protected cruiser of the Powerful type. The protected cruiser may be called upon to perform any or all of three duties: (1) to attack the enemy's commerce; (2) to protect one's own commerce; and (3) to gather intelligence of the enemy's movements. Germany, as we have already said, has realised that (1) and (2) can be best achieved by defeating the enemy's main battle squadrons; and for (3) she is building but very small vessels, holding that their sphere of activity will be confined almost entirely to the waters of the North Sea. Since 1898, therefore, no protected cruisers of a greater displacement than 3800 tons have been built for the German Navy, but in the same period the speed has been increased from the 19 knots of the Freya class to the 24·5 knots of the new turbine cruisers *Ersatz Pfeil*, *E. Comet*, *E. Jagd* and *E. Greif*, which are to be completed between October, 1908, and the end of 1909. The latest completed ships of the class are the four vessels of the Königsberg type, of 3420 tons and 23·5 knots, protected by a deck of 2 in. of Krupp steel and armed with ten 4·1-in. and eight 3-pounder guns. Immediately

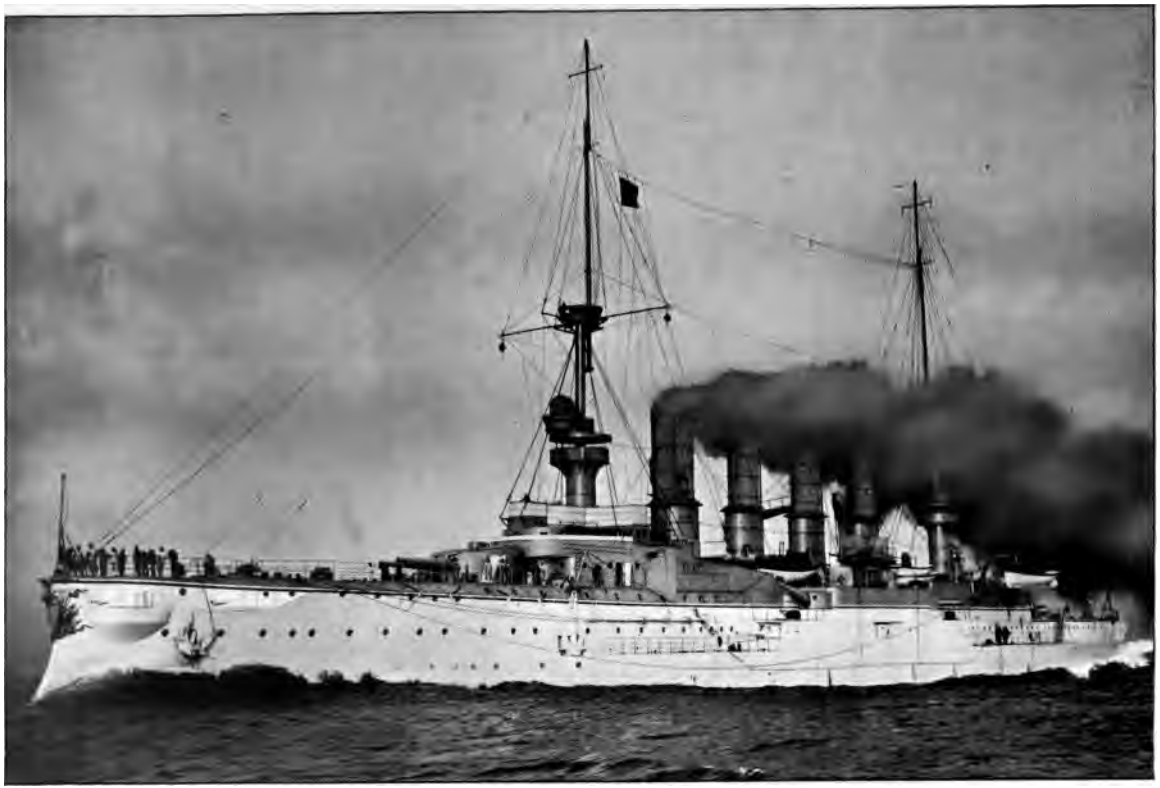


Photo. Kenard, Kiel

S.M.S. SCHARNHORST. Armoured Cruiser
Displacement: 11,600 tons. Armament: Eight 8·2-in., six 6-in.
Sister ship: *Gneisenau*

Not to be taken away

preceding these were the seven 23-knot Hamburgs, all of which exceeded their contract speed on a sea course of 170 miles; and before these again came the three Frauenlobs and the seven Gazelles.

In this class of ship Germany is a long way ahead of Great Britain, not only in numbers, but in the qualities of the ships themselves. In the last ten years we have built only four fast protected cruisers for fleet work—the vessels of the Gem class; and although we have also built eight other vessels under the name of Scouts, their sea-keeping qualities are so poor that for practical purposes of this description they are useless. On the other hand, Germany has, in the same period, built no fewer than twenty-five such ships, and when it is realised that she builds with the one idea of a North Sea war, it will be seen that Great Britain, with her innumerable oversea interests, is even further behind her rival than the bare figures indicate.

The comparison between individual ships of the two navies is as follows:—

	Ersatz Comet.	*Topaze.*	*Scouts.*
Displacement.	3800 tons ...	3000 tons ...	2800 tons.
Speed . .	24·5 knots ...	22 knots. ...	25 knots.
Coal capacity.	900 tons ...	500 tons ...	380 tons.
Armament .	Ten 4·1-in. ...	Twelve 4-in. ...	Ten 12-prs.
	Eight smaller	Eight smaller	

The slightly superior speed of the Scouts is more than discounted by their very inadequate coal-supply, a factor in which the Topazes are also much inferior to the German vessels. The British estimates for the present year show that at last the Admiralty has determined to give our battle fleets a more adequate supply of this class of ship, without which heavy fleets are certain to be severely handicapped in the event of war.

Germany built her largest protected cruisers between 1892 and 1897. There is no need to give a lengthy description of them, as the *rôle* they would fill in war is not an important one. Their principal features will be found in the following table:—

Date of launch.	Name.	Displacement.	Speed.	Armament.
1892	Kaiserin Augusta	6300 tons ...	20·5 knots ...	Twelve 6-in.
1893	Gefion . .	3770 tons ...	20 knots ...	Ten 4·1-in.
1897	Freya . . .	5880 tons ...	19 knots ...	Two 8·2-in. Eight 6-in.
	Hertha . .			
	Victoria Luise .			
	Vineta . .			
1898	Hansa . .			

There are, besides, two old cruisers (1887–8), the *Prinzess Wilhelm* and the *Irene*, of 4300 tons and 18 knots, with an armament of four 6-in. and eight 4·1-in., and a number of smaller and older cruisers and gunboats of no fighting value.

In slower and larger cruisers after the general type of those detailed above, the British Navy is at a decided advantage; but the circumstances of England and Germany are so utterly different that it is impossible to draw any fair comparison between them in the matter of protected cruisers, the required number of which depends so largely upon oversea obligations. In some measure it is possible, nevertheless, to distinguish between those which England maintains for the attack and defence of commerce, "showing the flag," etc., and those for intelligence purposes with the battle fleets. In the Channel, Mediterranean, Atlantic, and Home (Nore) fleets, there is a total of thirty-two battleships, to which are attached thirteen protected cruisers; but only three of the latter have a speed exceeding twenty knots. There is not a single fleet scout in

the Nore Division of the Home Fleet, which comprises eleven armoured ships. The German Active Battle Fleet of sixteen ships, on the other hand, is attended by six scout cruisers, every one of which is capable of at least twenty-two knots. Having in view the particular needs of the two countries, there is, therefore, no reason to believe that, in spite of her actual numerical inferiority, Germany is worse served in the matter of protected cruisers than Great Britain, and she certainly disposes of such as she has to better advantage.

TORPEDO CRAFT

No branch of the German Navy is more formidable than the torpedo flotilla, and none is destined to play a more important part in any conflict which may arise in the north of Europe. The advent of the torpedo in the days when the pivot of naval rivalry was in the Mediterranean was held to affect very vitally the position of Great Britain in those waters, and the formation of French torpedo bases in Corsica and the north of Africa was in many quarters regarded as a serious menace to our supremacy. Now that the North Sea has usurped the importance lately attaching to the Mediterranean, the potentialities of the torpedo vessel as a weapon to be used against us are enormously increased. Confined waters are the ideal hunting ground of these craft, and as such the Mediterranean was regarded ten years ago. But whereas the Middle Sea is 2200 miles long and over 1000 in extreme breadth, the North Sea is but 700 miles long (from Dover to Shetland Islands) and 400 miles wide. The number of bases of possibly hostile torpedo craft is the same in the North Sea to-day as it was ten years ago in the Mediterranean, and they are within easy striking

distance of the harbours where almost at any moment is to be found a number of battleships and large cruisers. The changes of the last few years have, therefore, added considerably to the relative importance of the torpedo vessel, a fact which has been recognised on both sides of the North Sea, Great Britain showing her appreciation of this importance by redistribution, and Germany, who needs never distribute or redistribute, by new construction.

Numerically the German torpedo flotilla is still very much inferior to the British; but in no other branch of the naval service are instant readiness for war and constant presence at the point of danger of such vital import. The bearing of these considerations must, however, be left to the chapters on the North Sea, our business here being to discuss the actual aggregate strengths of the two navies' flotillas. They may be tabulated as follows, all vessels, built and building, being included:—

Nominal speed.	British.	German.
Over 30 knots	16 ...	2
27 to 30 knots	106 ...	73
Less than 27 knots . . .	34 ...	7
Total . . .	156 ...	82[1]

On the bare figures, therefore, Great Britain has a superiority of nearly two to one; but there are other considerations which have to be taken into account before one can arrive at a just comparison between the two flotillas.

[1] A note in Jane's *Fighting Ships* (1906–7 edition) says: "These destroyers are excellent sea-boats, strongly constructed, and, in every case, tested by acceptance trials in really bad weather in order to guarantee against leaking or straining. They are in no sense the fragile craft that destroyers are popularly supposed to be, and all of them are able to make or exceed their contract speed."

The "life" of a torpedo-boat destroyer is generally reckoned at ten years, and when German craft reach twelve years of age they are nominally replaced by "substitute" vessels, although the old craft are often retained for some years longer. In the British Navy, on the other hand, no age limit is enforced, though there is a growing feeling that some such course should be adopted. Since we first commenced to build destroyers, in 1893, not a single vessel of the class has been removed from the list owing to age or inefficiency, although several have been lost at sea, and one, the *Skate*, was sold after having been used as an experimental target. The inefficiency and unreliability of the older British craft under active service conditions are notorious; and if a stringent examination were made to-morrow, between forty and fifty at least would be swept from the list of efficient ships. So long as they are allowed to figure in it they credit us with a false appearance of strength which deceives only those who cannot realise how rapidly and disastrously even the slightest defects will develop in these craft under the strain and stress of war. It will not be without interest to compare the British and German flotillas according to age, reckoning from the date of launch.

	British.	German.
Over 12 years old	18	7
From 10 to 12 years old . .	57	—
From 5 to 9 years old . . .	35	27
Building, and less than 5 years old .	46	48

The chief significance of these figures is that Germany is slowly overtaking us; and when at last we are brought face to face with the fact that most of the craft built before 1898 are unfit for the work that war would throw upon them, the sweeping of two-score destroyers from the Navy

List may be expected to create something like a panic. It is obvious that if the "life" of a destroyer cannot safely be reckoned at more than ten years, we should have to lay down every year fifteen new boats to maintain our strength at its present total of 156; but in the three years 1905–6 to 1907–8, inclusive, only thirteen destroyers have been provided for, representing a potential reduction of thirty-two from our effective strength, since the age limit would have overtaken fifteen vessels in each of the three years, or forty-five in all. In the same period Germany has provided for thirty new craft, eighteen of which are now in service.

The construction of torpedo-boats has not engaged the attention of the German Admiralty since 1898, until last year, when twelve 25-knot boats were provided for, the construction of these vessels having been suspended in favour of the larger, more formidable and sea-going destroyer. There are, therefore, comparatively few in the Imperial Navy to-day, the actual number being forty-one, none of which is capable of a speed of more than twenty-six knots. Great Britain, on the other hand, has steadily provided for torpedo-boats in her programmes, though an effort was made at first to classify the newest types as "coastal destroyers." In making comparisons with the German torpedo flotilla it is not unusual, even now, to find these "coastal" craft reckoned in the total of British destroyers; but so far at least as the Admiralty is concerned, the pretence has been abandoned, and the ships relegated to their proper place amongst the torpedo-boats, making our total strength in this class ninety-nine, with twelve additional boats provided for in the 1907–8 programme. Our superiority in these vessels is, therefore, overwhelming; but it must be remembered that their

small sea-going and sea-keeping capacity renders them incapable of undertaking operations beyond a very small radius from their base. Their *rôle*, indeed, is best described by the word originally applied to them—"coastal"—and that is a *rôle* on which Germany prefers to waste as little energy as possible.

To this same preference—to a healthy contempt for the defensive and a full realisation that a vigorous and unhampered offensive alone can bring her maritime ambitions to fruition—is due also Germany's comparative lack of interest in the submarine. Of these craft we have thirty-nine complete, and twenty building or about to be laid down—fifty-nine in all,—while Germany has but two. So long as the submarine remains in its present stage—about as useful to a virile naval Power as the discarded Brennan torpedo, and, like it, irremovably tied down to the defence of coasts and harbours—England need never fear that this proportion will be materially altered. There is no place in the German Navy for submarines—yet; when they have attained to the dimensions and something of the sea-going qualities of a torpedo-boat destroyer—capable of acting on one side of the North Sea from a base on the other—Germany will take up the submarine seriously. For the present, as in the past, she prefers to leave most of the experimenting to other nations, though under the Navy Act of 1907 an annual expenditure of a quarter of a million is detailed for this purpose. It is not unlikely that this sudden burst of interest is due to the splendid performance of the German submarine U 1, which recently "steamed" 600 miles under her own power. But until Germany abandons the idea of the offensive, so eloquently embodied in her fleet organisation to-day; until, that is, she abandons her naval aspirations and

admits the possibility of her fleets being defeated and her coasts blockaded by her enemy, she will not turn her attention seriously to the submarine boat, unless it grows considerably in the meantime. France is *the* submarine boat Power; she has ninety-nine of various types, and the official reason for such a policy is that since she can never hope to rival Great Britain in sea-going ships, she should make her coasts as secure as she can. To such a confession of inferiority and despair Germany has not yet descended.

The use of the submarine mine in naval warfare is engaging a great deal of attention in Germany just now, mainly as a result of the phenomenal success which attended the employment of these weapons in the Russo-Japanese War. At the Hague Conference, although Germany offered to subscribe to an international agreement forbidding the employment of mines altogether for a term of seven years, she absolutely declined to be a party to any restrictions being placed on their use after that date. The time limit was not accepted, and Germany is now preparing to employ these deadly weapons on a scale that is likely, when it comes to be put into operation, to "stagger humanity" in more senses than one. The German naval press has declared that she will use them for every possible purpose. She will save her ships for other than blockade work by dropping mines at the entrances to our commercial harbours; she will sow them on the high seas in the tracks likely to be followed by British fleets—whether war or merchant shipping; and she is building for the purpose specially designed vessels to enable the mines to be dropped as rapidly as possible and with the least likelihood of detection. Few things would be easier than for a ship to scatter mines broadcast in the estuary



Photo, Renard, Kiel

GERMAN DESTROYER FLOTILLA AT MANŒUVRES WITH THE ACTIVE BATTLE FLEET

of the Thames, where not only would the commerce of the Port of London be seriously interfered with, but where the fleets at Chatham and Sheerness would run great risks if they endeavoured to reach the open sea.

Two new vessels have just been added to the German Navy for this purpose, the *Nautilus* and the *Albatross*. Great Britain is so far contenting herself by converting cruisers for use as mine-layers. The *Iphigenia* and *Thetis* have already been converted, and the *Melampus*, *Intrepid* and *Apollo* are about to be put in hand.

BRITISH NAVAL ORDNANCE

Calibre.	Marks.	Length in calibres.	Weight of gun.	Weight of armour-piercing projectile.	Initial velocity.	Maximum penetration of Krupp cemented armour with capped A.P. shell.		Average rate of fire. Rounds per minute.
						5000	3000	
Inches.			Tons.	lbs.	Foot-secs.	Inches.	Inches.	
13·5	I	30	67	1250	2016	9	12	·4
12	XI	45	58	850	2900	17½	22	1
12	IX	40	50	850	2750	16	20	1
12	VIII	35	46	850	2367	11½	14½	1
10	new	45	32½	500	2800	11½	14½	1
10	old	32	29	500	2040	5½	7½	·6
9·2	XI	50	30	380	2800	10	13	
9·2	IX & X	45	27	380	2640	8¾	11¼	2–3
9·2	VIII	40	25	380	2347	6¾	9¼	2–3
9·2	VII-III	30	24	380	2065	4	6½	·8
7·5	II	50	16	200	2800	6½	9¼	2–3
7·5	I	45	14	200	2600	5¾	7½	2–3
6	IX & X	50	7½	100	2800	4	5½	7
6	VII–VIII	45	7½	100	2535	3	4½	7
6	wire	40	7	100	2200	...	...	8
4·7	wire	40	2	40	2188	...	...	
4	wire	40	1⅓	25	2300	...	...	
3·5	18 pdr.	...	...	18				
3	12 pdr. 14 pdr. V	28	12 cwt.	12	2200	...	...	

GERMAN NAVAL ORDNANCE

Calibre.	Designation.	Length in calibres.	Weight of gun.	Weight of armour-piercing projectile.	Initial velocity.	Maximum penetration of Krupp cemented armour with capped A.P. shell.		Maximum rounds per minute.
						5000 Yards.	3000 Yards.	
Inches.	c/m.		Tons.	lbs.	Foot-secs.	Inches.	Inches.	
* 11	28	50	49	1,000	3250	18½	22	
11	28	40	34	595	2854	12	15	1
11	28	40	44	474	2296	6	8½	¼
11	28	35	43½	474	2231	5	7½	¼
9·4	24	40	21	309	2900	8½	11¼	1½
9·4	24	40	21	309	2500	7½	10¼	1½
9·4	24	35	22	252	2300	5½	8	2
8·2	21	40	16	242½	2526	6½	9	3
6·7	17	40	8	132	2887	5¼	6¾	5
6	15	40	5	88	2460	3½	5	7
6	15	35	5½	88	2230	...	2½	7
4·1	10	40	1½	38	2300	...	2	8
4·1	10	35	1¼	38	2000	...	...	8
3·4	8·8	35	1¼	24	2788	...	...	10
3·4	8·8	30	¾	15½	2165	...	...	10
2	5			6	2165	...	...	12

* Gun for new ships. None yet mounted.

V

GERMAN SHIPBUILDING RESOURCES

UNTIL the unification of the Empire there was practically but one shipbuilding centre, Danzig, to wit, in the whole of what is now Imperial Germany. The first of all modern German shipbuilding yards was founded there in 1827 by J. W. Klawitter; a few years later the Danziger Maschinenfabrik und Schiffswerft Actiengesellschaft Johannsen & Co. was established; and under an Order in Council of May 1, 1844, the Imperial Dockyard came into existence. The world-renowned firm of Schichau was founded here in the thirties of last century, and in 1855 constructed the first screw steamer, the *Borussia*, and, in 1877, the first German sea-going torpedo-boat. After the war of 1870–1, when Von Stosch was at the head of the naval affairs of the Empire, no pains were spared to develop the iron and steel industries, then becoming of such supreme importance in naval construction. No narrow views or false economies were allowed to retard the progress of the Empire, and although at first high prices had to be paid for home-products, the accruing profits were such that the great ironworks in Westphalia, Silesia and Rhenish Prussia were soon able so to enlarge and improve their plant as to bring prices quickly down to the level of foreign-made materials. In 1897 a very remarkable return was presented to the Reichstag, showing the development of the shipbuilding industry since 1870. According to this document, the number of shipbuilding

yards in the Empire in 1870 was seven; in 1897, thirty-nine; while in the same period the number of workmen employed in them increased from 2800 to 37,750. To-day there are forty-seven shipbuilding yards; and in 1905 the number of men employed was, in the Imperial yards, 16,400; in the twenty-eight largest private yards, 41,051—a total of 57,451.[1]

There are three Government shipbuilding yards, two on the Baltic—Kiel and Danzig—and one on the North Sea—Wilhelmshaven—with a total of seven building slips. By far the greater part of the naval work is given to the private firms; but such as finds its way to the Imperial yards is so divided up that the battleships are constructed at Wilhelmshaven, armoured cruisers at Kiel, and smaller vessels at Danzig. The writer recently enjoyed the privilege of visiting the establishments at Wilhelmshaven and Kiel; but no lengthy description of them need be given. Like everything German, they are models of organisation. Every man has his work to do, and, differing from the average dockyard mechanic in England, takes a keen pride in doing it. The result is an excellence of material and workmanship unequalled in any navy in the world. In spite of the time it spends at sea, the immunity of the German Fleet from breakdown and disaster has for years been the admiration of our own service, and would, if he knew and understood it, be the envy of every taxpayer in the land. The financial penalty for "scamping" and inefficient workmanship is a surprisingly high one, to say nothing of the fact that ships produced under such conditions are apt to "crumble up" at the critical moment, wasting not only the cost of repair, but the whole cost of construction and maintenance up to the

[1] See Appendix VII for figures of German shipbuilding.

time when the need for action arises. Nevertheless, although the last ounce of energy and intelligence is exacted from the German dockyard workman, he is by no means the down-trodden person that many would have us believe. Concert-halls are provided for his special use, and cook-houses and eating-rooms where he may purchase and eat the most wholesome of food at a price that would make the average guinea-a-week labourer in a British dockyard turn green with envy. The national workman is regarded in the Fatherland as a national asset. He is made to feel that while the future of his Empire depends upon the fleet, the ability of the fleet to assure the future depends largely upon him; and for that reason, if for no other, good care is taken that he shall have little cause for complaint. We have a different standard of treatment in England, with all our democracy. The events that have occurred during the last few months in Woolwich could not happen in Germany.

From the shipbuilding point of view, the private yards are, as has been said, of much greater importance than those of the Imperial Government. The following table shows this very clearly and briefly, as well as the number of building slips available and (approximately) the number of men employed at the yards named.

Imperial Yards.	Ships Built.		Building Slips.		Employees (*circa*).
	Battleships.	Armoured Cruisers.	Large.	Small.	
Kiel	1	5	3	...	7500
Wilhelmshaven	7	...	2	...	4500
Danzig	...	...	1	1	3500
Private Yards.			Ten.		
Germania (Krupp's), Kiel	7	...	...	...	3000
Vulcan, Stettin	5	...	7	...	7000
Schichau, Danzig and Elbing	5	...	7	8	7500
Blohm and Voss, Hamburg	1	3	6	...	5100
Weser Yard, Bremen	...	1	4	4	2200

During the past year or two there has been considerable discussion in this country as to the capacity of Germany for extensive and expeditious shipbuilding. The famous Selborne Memorandum has (November, 1905) laid it down that for the future the time to be occupied in the construction of British armoured ships, from the laying of the first keel-plate to the completion for sea, was to be two years. This excellent policy was quickly abandoned; the armoured cruisers of the Inflexible type will not be less than thirty months under construction; but at the time it aroused a good deal of interest, and in many quarters it was stated that in no other country in the world was such rapid construction possible. This was generally accepted (anything that gratifies our national vanity usually is: *vide* the story that the *Dreadnought* could account for the whole German Navy single-handed); but Count Ernst von Reventlow, the editor of the well-known naval publication *Ueberall*, made inquiries of various shipbuilders in Germany, with the following results:—

Vulcan Co., Stettin.

"We could lay down, year by year, two battleships and two armoured cruisers of the size mentioned (18,000 tons and 15,000 tons respectively). It is also possible to reduce the time for constructing these ships to something between twenty-four and thirty months, if the contractors for the guns and armour can keep pace with the construction of the ship."

Krupp, Germania Yard, Kiel.

"We are in a position to reduce the time for constructing a battleship or armoured cruiser to twenty-four or

thirty months. As we have seven large building slips we could lay down each year at least two ships of the largest type."

Schichau, Danzig.

"The German yards could easily build three times the number of warships ordered by the Admiralty at present. There cannot, however, be any reduction in the time for building the vessels. As it is now, thirty-six months is a very short time."

Blohm and Voss, Hamburg.

"We can lay down yearly two vessels, battleships or cruisers, provided that guns and armour are delivered in time. We think it possible to complete a vessel in twenty-four to thirty months if the plans are ready and no changes are made whilst the construction is going on."

A similar reply was received from the Howaldt yard, Kiel.

When it is remembered that the British Admiralty had to abandon its time limit of twenty-four months before a single ship had been built under it, the above replies to Count von Reventlow's inquiries are, to say the least, significant. With such a magnificent concern as Krupp's armour and ordnance factories behind them, there seems to be no reason whatever why Germany should not build at least as fast as Great Britain. For the last five years, at any rate, her average has not been appreciably smaller than ours, and on more than one occasion she has beaten us. Further, there is no fictitious "completing" of German ships as there often is with ours. The armoured cruiser *Warrior* is a case in point. She was nominally completed and commissioned at Pembroke on June 1 last; but on that date she was not nearly ready for sea, and after having more work carried out at Pembroke, had to call

for various finishing touches at Devonport, Portsmouth—where she was docked—and Chatham. Altogether nearly three months elapsed between the nominal and the actual completion, and as recently as February this year she had to go into dockyard hands in order to have work done that should have been completed before she was commissioned.

Another very interesting contribution to this discussion appeared as an appendix to the Navy Act Amendment Act of last year. It took the form of a comparison between the actual time occupied in warship building in England and Germany, reckoning all vessels built since 1900, and counting from the date when the first appeared in the estimates. The figures for battleships are as follow :—

England	(average)	. .	42·4 months
Germany	„	. .	42·5 „
France	„	. .	66·1 „
United States	„	. .	60 „

For armoured cruisers the figures are as follow :—

England	(average)	. .	44·9 months
Germany	„	. .	39·1 „
France	„	. .	60·4 „
United States	„	. .	62·9 „

It will be seen, therefore, that the average rate of construction in England is actually slower than in Germany.

As in England, all German torpedo craft are built by contract, the two firms of Krupp and Schichau (Elbing) sharing the work between them. All German destroyers are numbered, not named, as are our own, and those built at Kiel have a "G" prefixed to their number (to indicate the name of the yard, Germania), and those built at Elbing an "S," for Schichau.

If Germany fails to make good her challenge for sea-power, it will not be for lack of shipbuilding resources. If that were the only thing to be considered she could have thirty-six battleships on the stocks at once, and add them to her navy at the rate of twelve or fourteen a year. That there are difficulties in her way—and very serious ones, too—cannot be denied; but we need not imagine any that do not exist.

VI

THE NORTH SEA AMPHITHEATRE

THE principal object to be attained in the distribution of naval force is the ability to strike swiftly and decisively as soon as an enemy shall have declared himself. It follows, therefore, that political circumstances must have a preponderating influence on such distribution, for it would obviously be a waste of force to maintain large squadrons in waters where no potential enemy existed. The dictum of Nelson that "battleships are the best negotiators in Europe" is still honoured in the observance, and the main purpose kept in view by the British Government in the allocation of ships and squadrons is the preservation of peace by the constant threat of the instant employment of overwhelming strength if ever a breach should be made. It is, however, only within recent years that the full portent of this principle has been grasped and put into execution. Throughout the whole of the nineteenth century, the distribution of the British Navy was practically the same as in the years immediately succeeding Trafalgar, and no essential change was made until the factors working for alteration had attained such power as no longer to brook overlooking.

The first official notification that a breach with the past was to be made, took the form of a White Paper, signed

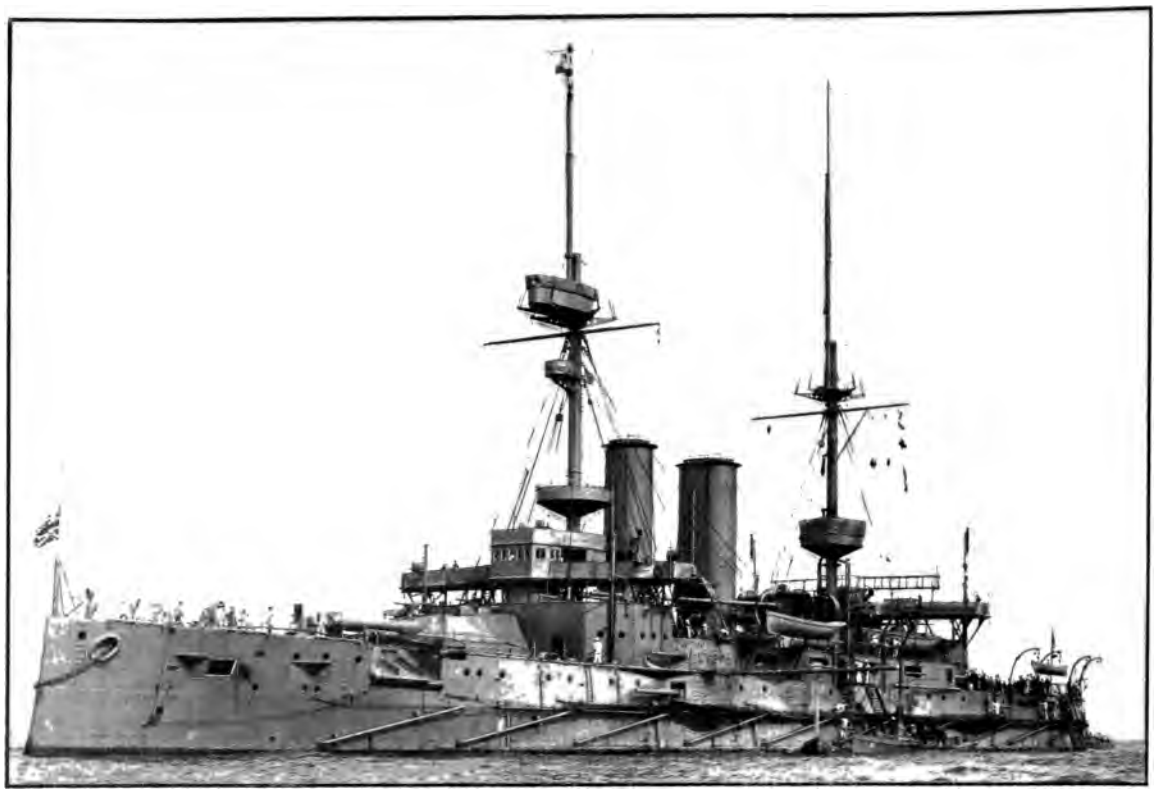


Photo. West & Son, Southsea

H.M.S. BULWARK. BATTLESHIP

(Flagship, Battle Squadron, Nore Division, Home Fleet)

Displacement: 15,000 tons. Armament: Four 12-in., twelve 6-in.

Sister ships: *Formidable. Implacable. Irresistible. Venerable. London. Prince of Wales. Queen*

by Lord Selborne, then First Lord of the Admiralty, and presented to Parliament on December 6, 1904. The paper dealt with the "Distribution and Mobilisation of the Fleet," and that part with which this chapter is chiefly concerned reads as follows:—

"The Board of Admiralty have decided to make certain changes in the distribution of the Fleet . . . the nature and reason of which I desire to explain.

"A new and definite stage has been reached in that evolution of the modern steam navy which has been going on for the last thirty years, and that stage is marked not only by changes in the *matériel* of the British Navy itself, but also by changes in the strategical position all over the world arising out of the development of foreign navies. In the Western Hemisphere the United States are forming a navy, the power and size of which will be limited only by the amount of money which the American people choose to spend on it. In the Eastern Hemisphere, the smaller but modern navy of Japan has been put to the test of war, and has not been found wanting. The Russian navy has been greatly increased, and (with the exception of the fleet in the Black Sea) has been wholly transferred, or is in the course of being transferred, from the Baltic to the Pacific. The navies of Italy and Austria-Hungary maintain their position in the Mediterranean, but they have not been the subject of such increased expenditure as those of other Powers. The French navy stands, as always, in the forefront. The new German navy has come into existence; it is a navy of the most efficient type, and is so fortunately circumstanced that it is able to concentrate almost the whole of its fleet at its home ports. . . .

"The principles on which the present peace distribution

of His Majesty's ships and the arrangements of their stations are based, date from a period when the electric telegraph did not exist, and when wind was the motive power, and it is a wonderful testimony to the strategical and political soundness of those principles that they have stood the test of time and met all the needs of the service up to the present moment.

"In the opinion of the Board of Admiralty, however, the new conditions described above have necessitated a review and readjustment of this distribution of ships and arrangement of stations. . . . The ideal which the Board of Admiralty has always had before them has been that the peace distribution of the fleet should be also its best strategical distribution for war. . . . The Board have had but one object in view, and that is that on a declaration of war the fighting efficiency of the fleet shall be complete and instantaneous. . . ."

That these are indeed the objectives which should control the workings of the Admiralty and the distribution and organisation of the British Fleet, none can deny; and a comparison of the strength and position of the various squadrons six years ago and to-day is sufficient evidence of the fact not only that these considerations do in reality underlie the administration of the Navy, but also of the truth that the one exigency ever before the eyes of the British Government is the possibility of a rupture with Germany. The scheme of redistribution introduced by the Memorandum of December, 1904, will not be fully carried out until the autumn of this year; but in principle it is already achieved, and it only remains now for a certain rearrangement to be made by which the various battle squadrons shall present a higher degree of homogeneity and modernity than is the case at present.

The following table shows the tremendous change in the distribution of our naval forces that has been made :—

HOME WATERS.

1902	Battleships.	Armoured Cruisers.	Protected Cruisers.	1908	Battleships.	Armoured Cruisers.	Protected Cruisers.
Channel Fleet . .	12	–	12	Channel Fleet	14	6	3
				Atlantic Fleet	6	4	3
				Home Fleet .	6	6	1
Totals . . .	12	–	12		26	16	7

FOREIGN STATIONS.

Mediterranean . . .	12	–	12	6	4	4
China	4	2	10	–	4	2
Australia	–	–	8	–	–	9
Cape of Good Hope . .	–	–	6	–	–	3
East Indies . . .	–	–	5	–	–	4
North America . . .	–	–	6	–	3	3
Pacific	–	1	3	–	–	–
S.E. Coast of America .	–	–	1	–	–	–
Totals . . .	16	3	51	6	11	25

It is by no means impossible that the great revolution indicated by these figures has been carried too far. The instability of international friendships, *ententes* and alliances is proverbial, and it may well be that in their eagerness to mass close at hand a force overwhelmingly superior to our potential enemies in Northern Europe, the naval advisers of the Government have reduced our squadrons abroad to a dangerous weakness. The character of the Asiatic is not a reliable groundwork for a matter so vital to England as the strategical disposition of her naval forces, and many things might happen between the despatch of a fleet from England and its arrival in Far Eastern waters—a distance of twelve or thirteen thousand miles—

while the possibility of a fighting alliance between an Eastern and a Western Power should not be overlooked. The one point which stands out above all others, however, is the immense concentration of British strength in home waters—in the waters which, in time now long passed, were known as the British seas. Reckoning battleships and armoured cruisers only, this strength is three times as great as it was ten years ago, and represents no less than 81·25 per cent of all the battleships and 57 per cent of all the armoured cruisers which we now maintain in full commission.

The cardinal motive underlying the action of the Admiralty in thus concentrating so great a proportion of our naval forces in home waters was clearly manifested by the inauguration of the Home Fleet in the beginning of last year, and frankly admitted in the House of Commons by Mr. Edmund Robertson when defending the new scheme of distribution of which it was part.

"The present scheme," he said, "is put forward by the Admiralty as in their opinion the best scheme for the distribution of ships and the manning of the Navy. Its chief feature is the concentration of strength in home waters, and its chief result will be additional security to the people of these islands against what I believe is their only danger—a sudden raid—and that, I hope, is not a serious one."

The significance of the declaration is vital. It is the first official admission that the growth of the German Fleet and the schemes of the German military authorities constitute a serious menace to the security of these islands. It declares that the menace is so real and so constantly present that it alone should govern the distribution of our naval forces; and it admits the possibility of the putting

into execution of those plans for a "sudden invasion" from Germany which those who now allow the possibility to dictate their actions had for so many years held up to ridicule and ascribed to the "fevered imaginations of scare-mongers."

In the natural course of naval and political evolution it was bound to be realised sooner or later that the pivot of maritime supremacy, and, therefore, of Great Britain's position in the world, was rapidly shifting from the Mediterranean to the North Sea; but the sudden awakening of the British Government to the reality of the change was not due to reasoning or to political prescience, so much as to the discovery of the existence of a scheme for the invasion of these islands that might at any moment have become an accomplished fact. It is still customary to decry the "bolt from the blue" school as consisting of timid folk afraid of something less substantial than their own shadows; but those who apply this term to them forget the official admission of the possibility of a "sudden raid" quoted above, and are ignorant of the facts upon which that admission was based. Briefly, the British Government, by those means which are always open to the Power ready to pay for information, came into the possession of a matured scheme for the invasion of this country which had not only been submitted to the German Government, but had been adopted as a plan of campaign that could be put into operation at almost any moment with the minimum of ostentation and the maximum probability of success. While the British naval forces nominally in home waters were at some distance from their stations—at Lagos or Gibraltar, for instance, or even in the western end of the Channel—a military force was to be embarked in the numerous liners and trading

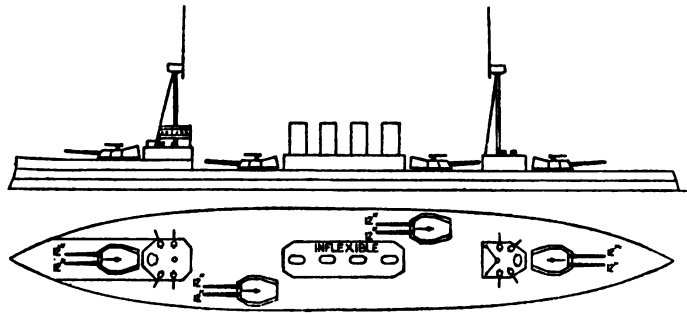
steamers that are always to be found in the German North Sea harbours. This invasion flotilla was to make for the Humber, and at the same time the whole German fleet was to seize the Straits of Dover. It was so arranged that the appearance of the flotilla off Hull should precede by an hour or so the appearance of the fleet off Dover, so that by the time the news reached London and orders had been despatched to the British naval forces, the German fleet would be in the most favourable position for dealing piecemeal with any detached ships or squadrons that in the first panic might be sent round for the defence of the coast. The vessels conveying the troops were to steam as far up the Humber as the depth of the river would allow, and then the invading force was to push across to Liverpool and cut the country in two in its most vital part. A continuous supply of reinforcements was to be kept up, and it was calculated that even if the German fleet met with disaster at the hands of the British, sufficient time would have elapsed before that event to enable the invading army to inflict such financial loss upon the great mercantile and manufacturing centres of the north as to compel the British Government to submission.

It is not intended here to offer any opinion on the possibility or otherwise of putting the scheme into operation and carrying it to a successful issue. It is sufficient for our present purpose to know that Germany believed in its practicability and that the British Government, as soon as it became aware of its existence, took immediate and drastic steps to render it impossible. The whole thing turned upon the entire absence of every considerable British naval force from the neighbourhood of the North Sea, for no attempt at a hostile landing on these shores from Germany could be made while a fleet was close at

hand and ready at any moment to fall upon the communications. In face of the proximity of an uncontained fleet in being trans-marine military operations are impossible. The answer was, therefore, obvious. The battle fleets and cruiser squadrons in the Channel and Atlantic were reduced, and the ships detached brought into the North Sea and based upon Sheerness under the title of the Home Fleet. Other divisions of the same fleet were based upon Portsmouth and Devonport; but it is futile to attempt to regard these three divisions as parts of one unit, and in all probability the only object in officially classing them in this way was to avoid the necessity of calling the Nore division by its more appropriate title of the North Sea Fleet. There is absolutely no likeness between the Nore division and those at the Channel ports, either in organisation, composition, or in the degree of readiness for war in which they are maintained, and a good deal of misapprehension would be removed if the Admiralty were to come out in the open and give these things their proper names, calling the Nore division the North Sea Fleet, and the Portsmouth and Devonport divisions the Reserve Fleet, which might then be attached to the fully commissioned division, as at present, for periodical manœuvres and exercises.

Since its inauguration the Home Fleet has been the object of a good deal of criticism, some of it groundless, much of it based upon undeniable facts, but all alike due in a large measure to ignorance of its actual *raison d'être*. So far as the threat of invasion or raid alone is concerned, it does not matter whether the Nore Fleet—we are not concerned here with the other divisions—is fully manned, has a greater or less allowance of practice ammunition than is customary, or is at sea for one month out of three

or one week in a year. So long as the fleet is in the North Sea, or at some base in those waters ready to proceed to sea at any moment, no attempt on our shores can be made. But here the critics have been at a disadvantage. Not knowing the actual reason for its inception, and failing fully to grasp the meaning of Mr. Robertson's reference to a "sudden raid," they have based their criticisms upon the official description of the fleet as "fully manned and in all respects ready for war," and have



H.M.S. INFLEXIBLE

PROFILE AND DECK PLAN (TO SHOW DISPOSITION OF ARMAMENT ONLY)

(By kind permission of *Fighting Ships*)

been able to show that in neither respect is the official description altogether justified. Many of the shortcomings that were apparent at its inauguration have been remedied. From a battleship squadron manned with nucleus crews it has developed into a fully constituted battle fleet—battleships, armoured cruisers, destroyers and submarines—all of which are fully manned, while the allowance of practice ammunition has been increased to an equality with the Channel and other sea-going fleets. But for the lack of fast scouts or protected cruisers, it is, so far as *matériel* is concerned, the most perfectly organised of all British fleets now in existence. It is still in the process of

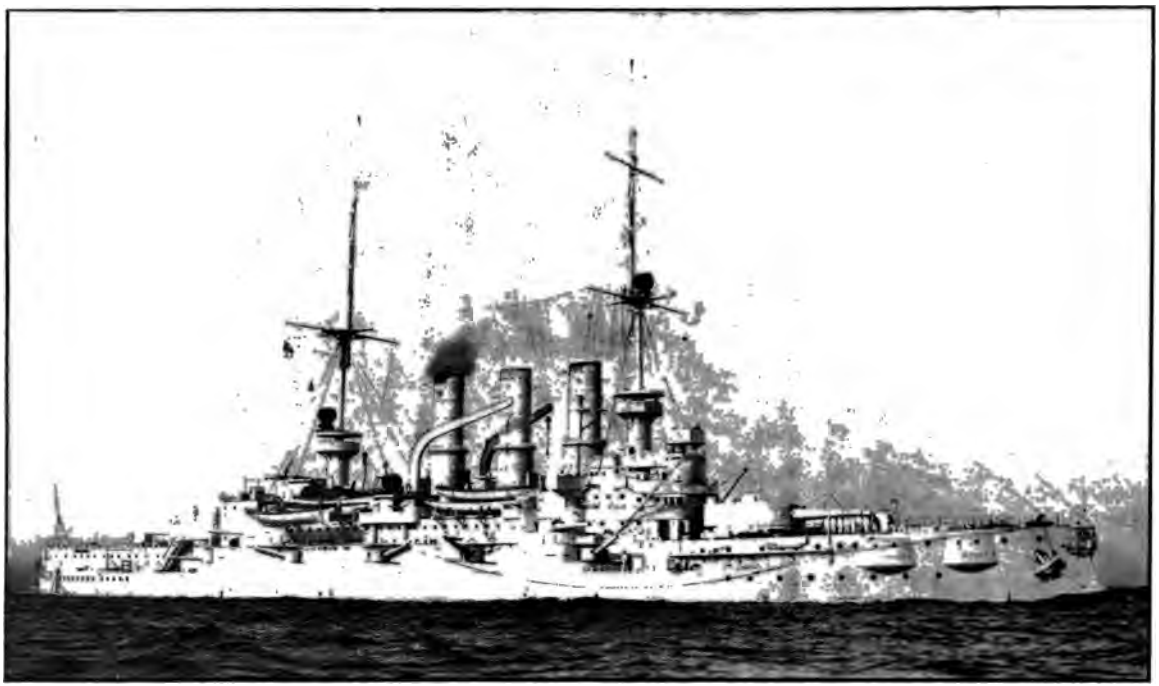


Photo. Renard, Kiel

S.M.S. DEUTSCHLAND. BATTLESHIP
(Flagship, Active Battle Fleet)
Displacement: 13,200 tons. Armament: Four 11-in., fourteen 6·7-in.
Sister ships: *Hannover, Pommern, Schlesien, Schleswig-Holstein*



development. By the spring of 1908, the splendid new battleships *Lord Nelson* and *Agamemnon* will have replaced two vessels of the Majestic type, while the three new armoured "cruiser-Dreadnoughts" *Inflexible*, *Indomitable* and *Invincible*, as well as the *Minotaur*, will also serve their first commission in the Nore Fleet. At the present moment the force is constituted as follows:—

HOME FLEET

NORE DIVISION: BATTLE SQUADRON

	Launched.		Armaments.	Remarks.
Dreadnought	1906	... Ten 12-in. ...		Flag of Vice-Admiral commanding-in-chief.
Bulwark	1899			Flag of Rear-Admiral.
London	1899			
Majestic	1895			Will be replaced by Agamemnon.
		... Four 12-in. ...		
		Twelve 6-in. ...		
Magnificent	1894			Lord Nelson will replace one of these on delivery.
Victorious	1895			

FIFTH CRUISER SQUADRON

Shannon	1901	... Four 9·2-in. ... Ten 7·5-in.	Flagship of Rear-Admiral.
Natal	1905		
Cochrane	1905	... Six 9·2-in.	
Warrior	1905	Four 7·5-in.	
Achilles	1905		

ATTACHED CRUISERS

Charybdis	1893	... Two 6-in. ... Eight 4·7-in....	These ships have nucleus crews only.
Dido	1896	... Eleven 6-in....	
Vindictive	1897	... Ten 6-in. ...	

DESTROYER FLOTILLAS

Topaze, cruiser, Commodore's broad pennant, with two scouts, eighteen 25½-knot destroyers and six 30-knot vessels. Five of the latter will shortly be replaced by the Afridi, Ghurka, Cossack, Mohawk, and Tartar, 33-knot ships.

SUBMARINES

Thames, cruiser, depôt. Submarines C1, C2, C3, C4, C5, C6.

The mere existence of this formidable force in the North Sea is sufficient to guarantee the country against raid or invasion. It is not perfect, either in *matériel* or *personnel*. The heterogeneous nature of the battle squadron, which will shortly number no less than four distinct types amongst its six units, is very detrimental to the carrying out of combined tactical evolutions, which are rendered still more difficult by the turbine-engined *Dreadnought*. The advantages of the turbine are numerous and weighty, but the peculiarities which this method of propulsion imparts to the vessels fitted with it are such as to make their presence in a fleet of reciprocating-engined ships very inadvisable. When the new Dreadnoughts now building are completed and passed into service, the whole of the turbine battleships will be formed into a separate squadron, but until then a single *Dreadnought* must be more of a drawback than an advantage to the fleet of which it forms a part.

The unsatisfactory system of manning the ships of the Nore Fleet at first decided on has been vastly improved. According to the original arrangements, this division of the Home Fleet, in common with those at Portsmouth and Devonport, was to be given nucleus crews only; but this was obviously inconsistent with the official descriptions of the fleet, and lent considerable colour to the complaint that the only object in forming it was to reduce the sea-going fleets and effect a monetary saving. The arrangement now in force is an infinitely better one. Three-fifths of the full complements, including all the officers and the essential gunnery, torpedo, mechanical and signal ratings, are carried throughout the whole commission, and the numbers are maintained at full strength by the drafting of men from the depôts and boys from the training estab-

lishments. The number of boys in individual ships has rarely been more than ten or fifteen in excess of the number usually borne by ships in commission, and in no single instance have they ever taken the place of the trained specialised ratings.

The most unsatisfactory feature in the manning of the Nore Fleet is that no less than two-thirds of the stokehold complements are composed of men undergoing training. This is especially regrettable because most of the cruisers are, and many of the battleships shortly will be, perfectly new ships, whose engines and boilers cannot fail to suffer considerably at the hands of inexperienced attendants. There is good reason, however, to believe that by the time the Home Fleet has passed the developing stage, this deficiency will be remedied; and when that has been done, there will be nothing to distinguish the *personnel* of the Home Fleet from that of the Channel or Mediterranean Fleet.

It has been said already that the Nore Fleet is amply sufficient for preventing the execution of any plans for an invasion or "sudden raid" of our coasts; but it is to be hoped that the day is far distant when this will be considered the most important function of the British Navy in war. The primary object of our fleet is, and always should be, the destruction of the enemy's fleet. It should be so distributed as to be able to fall in superior force upon it at any moment; and since it is tacitly admitted by the representatives of the Admiralty in Parliament that, for the present and the immediate future, the only Power likely to fill that *rôle* is Germany, and since, further, practically the whole of the German Navy is concentrated in the North Sea (the German Fleet being distributed on essentially war principles), it would be

natural to think that the Admiralty would have so arranged things as to have always in the North Sea a stronger force than that which Germany maintains in those waters in an instantly ready condition. Such, however, is not the case. The German Active Battle Fleet (Aktive Schlachtflotte, or Hochseeflotte) is much more powerful than the Nore Fleet, and is constituted as follows, under the supreme command of Admiral Prince Henry of Prussia :—

GERMAN ACTIVE BATTLE FLEET

FIRST DIVISION

	Launched.	Armament.
Wittelsbach	1900	Four 9·4-in. Eighteen 5·9-in.
Zahringen	1901	
Mecklenburg	1901	
Wettin	1901	
Kaiser Karl der Grosse	1899	Four 9·4-in. Eighteen 5·9-in.
Kaiser Wilhelm der Grosse	1899	
Kaiser Barbarossa	1896	
Kaiser Wilhelm II	1897	

SECOND DIVISION

Deutschland	1904	Four 11-in. Fourteen 6·7-in.
Hannover	1905	
Pommern	1905	
Preussen	1903	
Elsass	1903	
Braunschweig	1902	
Hessen	1903	
Lothringen	1904	

ARMOURED CRUISERS

Scharnhorst	1906	Eight 8·2-in. Six 6-in.
Gneisenau	1906	
Yorck	1904	Four 8·2-in. Ten 5·9-in.
Roon	1903	

Attached to the fleet there are the six small cruisers *Hamburg*, *Lübeck*, *Berlin*, *Danzig*, *Königsberg* and *Frauenlob*, whose high speed gives them a considerable value as

scouts. Like our own fleets, the Aktive Schlachtflotte is continually undergoing development, the place of the older ships being taken by new vessels as they are passed into service. By the end of this year the two new ships of the Deutschland type, the *Schlesein* and *Schleswig-Holstein*, will join the fleet, and it is anticipated that these two ships will be additional and not substitute vessels, so that the strength of the battle fleet will be raised to eighteen. There are four obsolescent battleships in reserve at Wilhelmshaven.

The torpedo flotillas attached to the Aktive Schlachtflotte number in all sixty vessels, not all of which, however, are kept in full commission. The number maintained in a permanent condition of readiness for sea is sixteen, of which six are engaged in training duties and two on fishery protection. The remaining forty-four are provided with nucleus crews, the balance of the officers and men living in the depots at the various ports to which the vessels are attached. These nucleus-crew destroyers are nominally available at six hours' notice, fully manned and stored and ready for sea; and it may be taken that about eighty per cent of them would be fit for service in that time, except just before and just after the manœuvres, when practically the whole of them would be available. Now a vessel that is ready to proceed to sea at six hours' notice is, for all practical purposes, "instantly ready";[1] so that, excluding the six instructional vessels (all the armoured ships in the Nore Division of the Home Fleet are instructional vessels), Germany has a force of fifty-four destroyers available at her North Sea ports at six hours'

[1] It may be noted, in passing, that at the moment of writing (February) the "instantly ready" British naval forces in the North Sea comprise five vessels out of a nominal thirty-six, the remainder being under repair, etc.

notice. In forty-eight hours she could muster between sixty and seventy.

Testimony on both of these points—to the danger of torpedo attack on heavy ships, and of such an attack coming as a "bolt from the blue"—was given by Admiral the Hon. Sir Hedworth Lambton in February, just before he left to take command of the China station. "The danger they had in the Navy at night," he said, "was the danger of the torpedo-boat and the mine. Our guns were exceedingly good, but at night they could not hit what they could not see, and a torpedo-boat could get within range of a battleship long before she was seen. If Great Britain thought that by having a superiority of battleships alone she was safe, we were making a very grave error. That superiority might cease in a night. There was such a thing as treachery. He believed that Englishmen were absolutely incapable of treachery, and he hoped other nations were also; but we did not know, and of course we must not trust them." Sir Hedworth Lambton was basing his remarks on recent experiences in manœuvres in the Mediterranean. There should be no hesitation whatever in taking adequate steps to render the threat of a treacherous torpedo-attack innocuous.

The aggregate naval forces of Great Britain and Germany maintained in the North Sea may therefore be tabulated as follows:—

	Battle-ships.	Armoured Cruisers.	Protected Cruisers.	Torpedo-boat Destroyers.	Sub-marines.
Great Britain	6	6	1	24	6
Germany	16	4	6	54	—

It is plain, therefore, that the British force, even allowing for a certain superiority on paper of its individual ships, is considerably inferior to that of Germany. In general

circumstances, this inferiority would be of little account, as the Channel and Atlantic fleets are never very far away from the probable scene of conflict; but if it was necessary to place a fleet in the North Sea to prevent a sudden raid on our shores, it is surely no less necessary to make that force so strong as to negative the possibility of a sudden raid upon the ships. Such a raid is known to be a cardinal feature of Germany's plans in the event of war with this country, and for its better and swifter execution she is establishing a first-class base for torpedo craft at Emden, which is little more than 250 miles from the port upon which our own Home Fleet is based. It was after this move became known that the British destroyer force in the North Sea was doubled, while shortly after (in May last) the "mother ship" of the flotillas was transferred from Portland to Chatham, thus ensuring their constant presence in the waters they are detailed to guard. In spite of these changes, however, our instantly ready torpedo flotilla in the North Sea is still inferior to that of Germany, even on paper; and it is notorious that at no single moment since these flotillas were stationed in the North Sea have all the vessels been at the same time ready for service. The experience of the last twelve months shows that the proportion that may safely be reckoned on varies between sixty and eighty per cent of the nominal strength. There is a strong reserve force at Sheerness and Chatham, but the ships belonging to it are never used for their legitimate purpose: that is to say, when a destroyer of the active service flotilla is put *hors de combat* for any length of time, its place is never taken by a vessel from the reserve. Once, indeed, on the occasion of the combined manœuvres last October, this was actually attempted; but the twenty-four reserve

destroyers at the Nore were in such a defective condition that seven substitutes had to be sent round from Portsmouth and Devonport. Not one vessel in the Nore reserve flotilla was fit for sea.

The strengthening of the destroyer flotillas in the North Sea is a problem which the Admiralty will have to face before long. Bearing in mind the unsurpassed efficiency of the German craft, both in *matériel* and *personnel*, and the tempting bait offered by the presence of a fleet of large ships in our east coast harbours, forty-eight destroyers would be none too many to guarantee our immunity from sudden and unexpected attack. The whole force of fully commissioned destroyers should never be absent from the fleet base at the same time. The opinion of torpedo officers of high repute is that one-third should be always at sea, one-third in harbour ready for instant action, while the remaining third would be composed of vessels undergoing refit or repair. A nominal force of forty-eight destroyers would then ensure an instantly ready flotilla thirty-two strong, of which sixteen would be constantly at sea prepared to take the first brunt of a surprise attack, while an equal force would be ready to defend the heavy ships at close quarters if the attacking flotilla succeeded in getting past the outer guard.

In armoured and protected sea-going ships our inferiority is strongly marked. We have but thirteen, including the cruiser attached to the destroyer flotillas, to Germany's twenty-six, and if our policy is to be consistent and thorough, and based upon the principle that we cannot afford to run the slightest risk where the command of the sea, or of such a vital part of it as the North Sea, is concerned, the balance should be redressed with as little delay as possible.

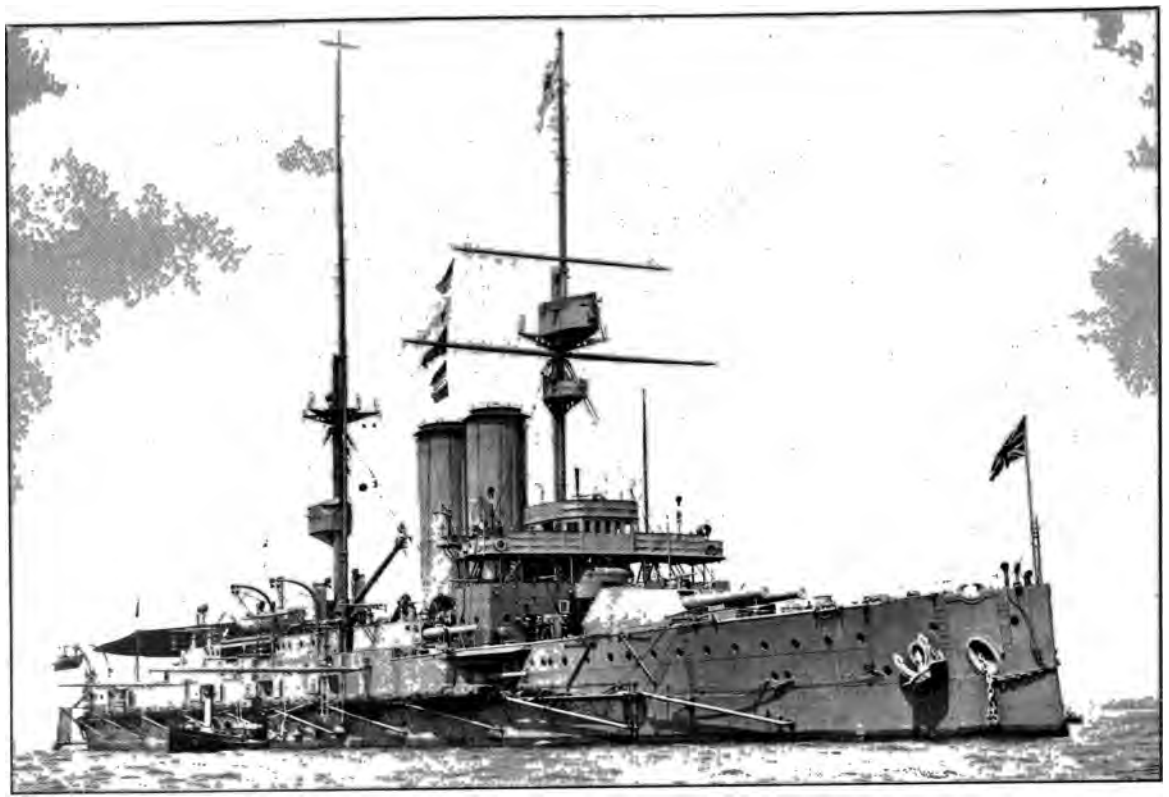


Photo. Symonds & Co.

H.M.S. KING EDWARD VII. BATTLESHIP

(Flagship, Channel Fleet)

Displacement: 16,350 tons. Armament: Four 12-in., four 9·2-in., ten 6-in.

In full commission in home waters we have, besides the Nore Division of the Home Fleet, the Channel Fleet of fourteen battleships and six armoured cruisers, and the Atlantic Fleet of six battleships and four armoured cruisers, the two latter representing in the aggregate a force little, if at all, inferior to the whole sea-going strength of the German Navy. At a time when our attention is so closely confined to maritime progress and ambitions on the other side of the North Sea, it appears at least strange that these fleets should still be based on Portland and Berehaven respectively, where, so far as availability for instant action in the theatre of greatest danger is concerned, they are absolutely wasted. The inadequacy of our "instantly available" forces in the North Sea has been the groundwork of much complaint lately, and it gains considerable strength—indeed, its only strength—from the fact that the sole aim of the new schemes of distribution has been, admittedly, to give us an overwhelming preponderance of strength at the most likely point of danger. That preponderance we have not yet attained, and until we have the criticisms will continue. The Admiralty might well consider whether the time has not arrived when our principal fighting fleet should not be based upon a North Sea port. The area of operations in the event of war between England and Germany will be so confined, the distances so small, and time of such paramount importance, that the difference between Devonport or Portsmouth and the Nore might well prove to be the difference between success and defeat in at least the initial stages of a campaign. If there is anything in "peace strategy," if it is of any use in war to have an overwhelming force instantly available at the point of danger, either the Channel Fleet should be trans-

ferred to the North Sea, and the Home Fleet to the Channel, where it could continue in its present status of a sea-going training fleet without, as at present, endangering the safety of the country; or, retaining its present bases and cruising limits, the Channel Fleet, with its Atlantic reinforcement, should be reduced to about one-third of its present strength and the remaining ships transferred to the Nore Division of the Home Fleet, on an actually ready-for-war footing.

The Atlantic Fleet, though of very recent formation, is even more of an anachronism than the Channel Fleet. Based upon Berehaven, its function in war is to reinforce the Mediterranean or Channel Fleet as circumstances might require. War with a Mediterranean Power, however, is not to be looked for for very many years to come, and, whenever it does come, it will necessarily be preceded by such warnings as to make preparation a comfortable operation. Germany alone is possessed of a political constitution that enables her to strike without warning—to make a "sudden raid"; every other Power must first conform to all sorts of harassing constitutional customs. Further, the only considerable naval Power in the Mediterranean is France, and apart from the amicable nature of the relations between England and that nation, her fleet has been reduced to such a deplorable state of inefficiency by a too wide application of the principles of liberty, equality and fraternity that, despite its formidable appearance on paper, it can no longer be reckoned in the first rank of the navies of the world. The prospect of the Atlantic Fleet ever being called upon to act in the Mediterranean is, therefore, very remote, so that the only *rôle* left to it is the reinforcement of the Channel Fleet. The latter, as we have already seen,

should not be in the Channel, but in the North Sea, and although unaided it would be ample to deal with the Aktive Schlachtflotte, the absence or presence of the Atlantic Fleet within striking distance might make all the difference between a war of one Armageddon and a campaign of several months' duration. The Channel Fleet alone could score success; combined with the Atlantic Fleet it would achieve annihilation.

If the first of these suggested rearrangements were carried out: if the British Fleet were redistributed solely on the lines of "peace strategy," the respective forces of England and Germany in the North Sea would be as follows:—

		Battleships.	Armoured Cruisers.	Protected Cruisers and Scouts.
Great Britain	Channel Fleet .	14	6	3
	Atlantic Fleet .	6	4	3
	Total .	20	10	6
Germany . . .		16	4	6

Such figures call for no comment, except to say that whereas the present position offers to Germany the prospect of at least an initial success in war with all the prestige and moral effect that carries with it, the rearrangement would place her at such a vast disadvantage as to put all possibility of a conflict out of the question for fifteen years at least. It also opens the question as to whether, in consequence of a false system of distribution, we are not maintaining in full commission at this moment many more ships in home waters than the position justifies. Taking things as they now stand: if our security is certain, if our forces in home waters are strong enough to guarantee us against all danger, the Atlantic Fleet, since it falls outside the scheme of things altogether, is a superfluity. On the other hand, if the

suggested redistribution were to be made, our preponderance in the North Sea would indeed be certain, but it would surely be a waste of money to provide thirty armoured ships, representing an aggregate tonnage of 424,100, to deal with twenty of an aggregate of 220,720 tons. With perfect safety the Channel Fleet could be reduced by at least two battleships, while the whole of the Home Fleet could be reduced to the status of a reserve, or some of its battle units drafted to the Far East. In any case, our supremacy in home waters would be far more real than it is under the existing arrangements, while at the same time a considerable economy might be effected by the reduction of the number of ships in full commission.

So far we have been able to meet the growth of the German Navy by the simple and economical method of redistributing our available battleships and cruisers. For seven or eight years to come we shall be able to continue on the same lines; but before the programme laid down by the Navy Bill of 1900 is completed our existing forces, whatever their distribution, will no longer avail to secure us against the avowed aggressive objects which Germany has in view. So long as the economical procedure sufficed, the Government was fully justified in pursuing it; but in little more than half a decade the German Navy will have attained such proportions that the more costly argument of "Ships, ships, and yet more ships" will have to be resorted to, unless in the meantime some universal congress of the nations gives practical expression to the admitted fatuity and inhumanity of the insane competition in armaments.

VII

NAVAL POLICY AND OUR NAVAL BASES

THE preparation and maintenance of war-fleets is a national duty involving many factors besides actual fighting forces afloat. Prominent among these are the provision of adequate means for the construction and repair of ships, and of suitably placed strategic bases at which the various divisions of the fleet may hold themselves in readiness to take the offensive immediately on the outbreak of hostilities. Obviously, there will be a considerable economy in cases where these two functions are satisfactorily discharged by one base. There will, for instance, be savings in official salaries and *personnel* generally; in the maintenance of railway and other communications; and in the provision of land defences; while the concentration of effort effected will add not a little to the *morale* of the men and to the efficiency of the offensive and defensive forces in their charge.

The effect of these strategic and economic considerations upon our national policy in the past is evident in the situation of our most important dockyards. It was no mere accident, but clamant strategical necessity, which placed both Portsmouth and Devonport opposite the shores of our hereditary enemy, France, and the efficacy of their service, both constructively and strategically, is writ large in the history of England and of the world.

After a century of comparative peace and inactivity at

sea, attributable almost entirely to the overwhelming success of the British Navy in the wars of the French Revolution, the ever-changing phases of international politics have not only revived the old spirit of maritime rivalry, but have removed the pivot of activity first from the Mediterranean to the Channel, and then from the Channel to our eastern gates. The effect of these changes upon the distribution of our naval strength has already been discussed in a previous chapter; and that they necessitate, further, a serious reconsideration of our position with regard to the other factors of maritime power, more especially with reference to repairing and strategic bases, has been so frequently emphasised both by Parliamentary representatives of the Admiralty and by the Press as to need no further repetition here. At the same time, however, considerable hesitation has been manifested as to the direction in which the admittedly necessary effort should be made—so much, indeed, that although the necessity was admitted seven years ago, it has not yet been put into more than very half-hearted execution.

It was in the early part of 1903 that the then Government completed the purchase of a large tract of land at Rosyth, in the Firth of Forth, for conversion into a naval base, within sight of Newhaven, where James IV in the fifteenth century made his experiments in constructing a Scottish navy. The genesis of the scheme was of a double nature. A year or so before a meeting had been held in London, at which Mr. Spenser Wilkinson and Mr. R. B. Haldane were notable speakers, to urge the Government to proceed at once with the construction of a base in the North Sea, which was growing more and more important with every unit added to the German

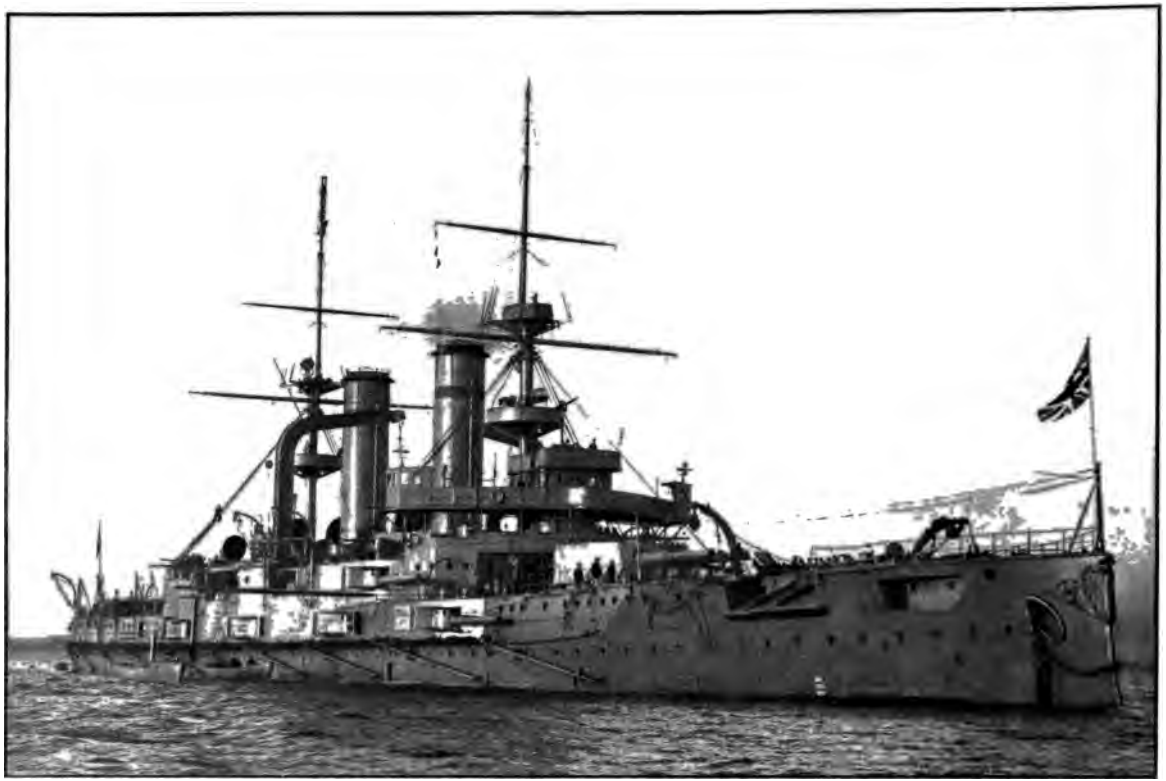


Photo. West & Son, Southsea

H.M.S. TRIUMPH. BATTLESHIP

Displacement: 11,800 tons. Armament: Four 10-in., fourteen 7·5-in.

Sister ship: *Swiftsure*

Fleet. Earlier than this, in March, 1900, a Committee had been appointed by the Admiralty to consider "the question of berthing accommodation for her Majesty's ships in the Dockyards and other waters, and also the moorings and materials required." The Committee comprised the Civil Lord, the Hydrographer (Rear-Admiral Wharton), the Director of Works, the Director of Dockyards, and the Director of Naval Intelligence (Captain Prince Louis of Battenberg). In its report this body suggested that some improvements might be effected at Portsmouth, Plymouth and Chatham, but it went on to state that, on the evidence then available, "the growth of the Navy will shortly make it impossible for these ports to accommodate all the ships, and the time has come for the Admiralty and the country to consider seriously whether the formation of another naval establishment is not necessary." They proceeded to recommend that a site should be acquired at St. Margaret's Hope, and it was urged that by buying a large area of land and foreshore in the first instance, and by so laying out the establishment as to allow for future expansion, great economy would be effected. The Government thereupon proceeded forthwith to buy the land recommended, and in the Naval Works Act for 1903 £200,000 was taken for the purchase and preliminary surveys. It was at that time intended to create a considerable naval base and repairing yard at this point, so as to relieve the pressure on the existing dockyards. As to the details of the scheme, however, the Admiralty refused to commit themselves.[1]

It will thus be seen that the congestion which at that time existed at the naval ports had a good deal more to do with the decision of the Admiralty than strategical

[1] The *Times* and *Naval and Military Record*, January, 1905.

considerations; but when at the end of 1904 the policy of "scrapping" obsolete, obsolescent and other cruisers and small craft—resulting in the removal of 155 vessels of all descriptions from the active list of the fleet—was brought into operation, it naturally became possible to take a simpler view of the question, and to eliminate from it the problem of finding sufficient accommodation for ships which were now discarded. At the same time there was no need whatever for the creation of a new shipbuilding yard, for the tendency of warship design in recent years has been uniformly along the lines of increasing size, and since this growth has been accompanied by an increase in the cost per unit at least proportionate, the natural result, since there is a limit to national expenditure, has been a falling off in the number of ships. This falling off will become much more clearly marked as the older ships now on the Navy List become obsolete and are removed. In considering the question of a North Sea naval base, the problem to be considered is, therefore, a purely strategic one, and does not necessarily imply the opening up of any fresh ground. The question to be answered is, What is the most suitably situated point for the fleet to use as its base in peace and war?

It was not until the end of 1904 that the problem was reduced to this comparatively simple stage, enabling it to be approached from the purely strategical standpoint; and the effect was immediately visible. In December of that year it was widely rumoured that the whole Rosyth scheme was to be abandoned; but in reply to a letter from Mr. A. W. Maconochie, M.P., Lord Selborne, then First Lord of the Admiralty, made the following declaration:—

"The statement is unfounded in fact. . . . On August 7, 1903, I commenced that portion of my speech which

referred to Rosyth by stating that that particular site had been selected for industrial, economical and strategical reasons, and I concluded by saying: 'I have only one further word to say, and that is as to the future of this naval base. The Board of Admiralty have purposely not attempted as yet to sketch to Parliament what they believe will be the final requirements of the country at that station. All we claim to have done is to have provided in the cheapest and fullest way possible for the expansion in the future which we foresee.' And on August 10, 1903, I made a further statement in the following words: 'I desire, personally, to limit as far as possible the extension of this particular base. It may be turned into a complete dockyard, like Portsmouth; it may only be a base for men, stores and ships, and for minor repairs, and not a manufacturing establishment in any sense. . . .'

"I have nothing whatever to withdraw from these statements, and have only to add that much that has happened since 1903 has accentuated the future importance of Rosyth to the Navy."

Behind such vague phrases as that with which this letter concludes, it will be seen that there is nothing but excuses for delay. Everything, indeed, points to the fact that whereas Rosyth was adopted merely in response to the requirements of the fleet for more accommodation, which requirements no longer exist, it has now been scrutinised under the microscope of strategic utility, as the only *rôle* now to be filled, and has been found wanting. It has been stated in the House of Commons that the development of the scheme has "not received the minute attention" of the present Board of Admiralty; while the estimates for the two years 1906–7, 7–8 provided

for an expenditure of only £18,000 under the heading of Rosyth. It is now stated in the Estimates for 1908–9 that the work is to be proceeded with, and that it includes the construction of a large basin, a dock for Dreadnoughts, and numerous workshops, the date for completion being fixed approximately at 1918. It is curious to note that in the many debates on this subject in both Houses of Parliament, although it was at first declared that Rosyth was adopted, partially, at least, for strategic reasons, and although strategic advantages have been claimed by those responsible for its adoption to attach to the port, no one has ever attempted to define those strategic reasons or to enumerate the strategic advantages. Yet, since the question of a North Sea base is essentially and exclusively one of strategy, it is upon this definition and this enumeration that the whole scheme turns. Let us see whether it is possible to throw any light upon the subject.

Rear-Admiral A. T. Mahan, the distinguished United States historian, in his collection of essays entitled *The Interest of America in Sea Power*, makes the following definition :—

"The strategic value of any position, be it body of land large or small, or a seaport, or a strait, depends (1) upon situation (with reference chiefly to communications); (2) upon its strength (inherent or acquired); and, (3) upon its resources (natural or stored). As strength and resources are matters which man can accumulate where suitable situation offers, whereas he cannot change the location of a place in itself otherwise advantageous, it is upon situation that attention must primarily be fixed."

With this definition in mind, it is proposed to compare the qualifications of Rosyth with those of the two old-

established North Sea naval ports of Chatham and Sheerness, which, for brevity, will be referred to collectively as the Nore.

The advantages of Rosyth, so far as the relations of that port to communications are concerned, may be summarised as follows. Defensively, it protects the commerce of Leith,[1] the port of Edinburgh, the incoming and outgoing "north-about" trade, and the trade with Norway. Offensively, it seals the sea entrance to the Baltic, so commanding the major part of the commerce of the ports of Stettin, Danzig and Lübeck. In each case, however, the trade protected or potentially attacked represents but a very small proportion of the aggregate maritime commerce of the country concerned. The port of Leith, and the German ports in the Baltic, could be closed to oversea trade without more than local distress being felt in either Great Britain or Germany; for while, on the one hand, Leith is as low as twelfth in the list of British home ports, on the other hand more than eighty per cent of German tonnage is registered at the North Sea ports of Hamburg, Bremen and Bremerhaven. Whether these considerations should have any influence on our policy is, however, open to serious question, for the war plans of Germany include an absolute cessation of trans-marine commerce, in face of which, in all probability, she would be able to hold out but a very short time. All references to German maritime commerce must be read with this reservation. There is the additional consideration that in the event of an Anglo-German war, supposing

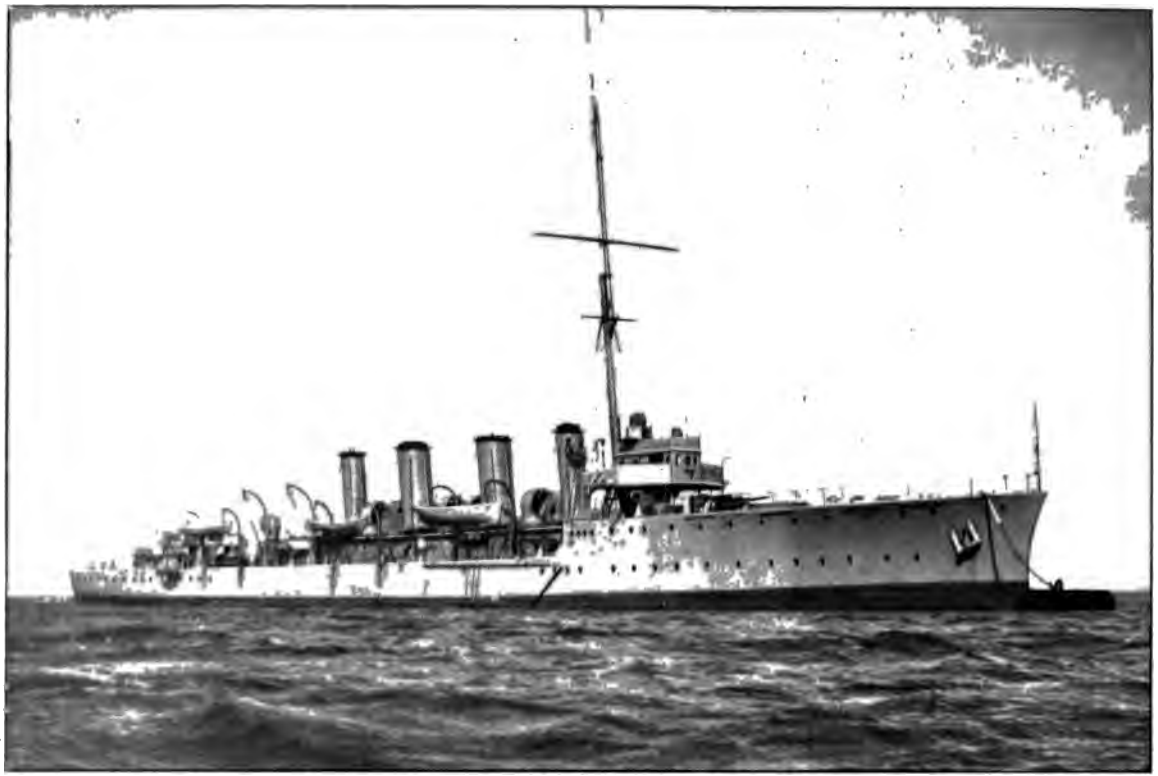
[1] This, of course, does not mean that fortifications at Rosyth would afford any protection to merchant shipping other than such as might be anchored within range of their guns. It means that Rosyth is a convenient base of operations for a naval force engaged in defending that shipping.

Rosyth to be the base of the British Fleet, the major part of German shipping bound to and from the Baltic would use the Kiel Canal. In an exclusively military sense, the only advantage of position to which Rosyth can lay claim is that it lies between Germany and the northern passage from the North Sea into the Atlantic. It is of value in this connection both militarily and commercially; but less so than Cromarty, which also possesses greater internal advantages.[1]

The Nore stands upon an altogether different footing. Defensively it is situated at the most important point of commercial concentration in the United Kingdom, or, indeed, in the world, since there every stream of commerce to or from the Port of London collects or disperses, its annual entrances and clearances being eight or nine times those of Leith. Besides its greater material consequence as evidenced in this comparison, the moral significance of a port which stands at the gate of the Empire's capital must needs be far more substantial than that of any other port in the kingdom. It needs hardly to be said that the amount of shipping which comes up the Channel and through the Straits of Dover, or *vice versâ*, is very many times greater than that which comes into Leith north about; and to all of this the Nore is a position of the utmost moment, for, if it be utilised as the base of a fleet, no hostile force in the North Sea could lay so much as a finger upon any ship entering the Port of London.

The status of the Nore from the offensive standpoint is no less important. Lying within fifty miles of the Straits of Dover, a naval force in the mouth of the Thames exercises full and complete control over that artery of

[1] Since Rosyth was adopted, the Channel and Home Fleets have anchored in Cromarty Firth much more frequently than in the Firth of Forth.



H.M.S. ATTENTIVE. Scout
Displacement: 2670 tons. Armament: Ten 12-pounders
Sister ships: *Adventure, Forward, Foresight, Patrol, Pathfinder, Sentinel, Skirmisher*

commerce, the sealing of which would mean the absolute stagnation of Germany's oversea trade. Since this represents about 80 per cent of the total foreign trade of the German Empire, the paramount importance of the Nore as a weapon in an Anglo-German war is at once apparent. True, it would still be possible for German trade to take—or attempt—the north-about route ; but the development of Rosyth—or, better, Cromarty—into a secondary base, and the stationing there of a force, such as the present Atlantic Fleet, sufficient to hold the northern passage into the Atlantic against any hostile fleet,[1] until reinforcements could come up from the Nore, would at the same time close that passage to German trade. With every avenue into her ports thus closed (with the exception of the insignificant Baltic trade), the submission of the German Empire would be merely a matter of time.

The absolute control which our geographical position gives us over the maritime communications — aye, the very maritime and oversea existence—of Germany is by no means a new conception. The general conditions that would obtain in the event of a war between England and Germany are, in their essential features, precisely similar to those which existed when England and Holland fought for commercial supremacy in the seventeenth century; and the following extract from *The Reminiscences of Richard Gibson*, written in 1654 and published by the Navy Records Society in their volumes relating to the first Dutch war (1652), shows how fully our geographical advantages were appreciated two hundred and fifty years ago. Gibson was a merchant skipper, and falling in with Captain Foster, who had commanded the *Phœnix* during the war, was given by him an account of a conversation

[1] See previous chapter.

with the captain of a Dutch merchant ship which he had captured.

"One day after dinner," says Foster, "I told him that the Lords States-General of Holland, being men of great abilities in State affairs, I did very much wonder they should be so much overseen as to begin a war with the English, when (like an eagle's wings extended over her body) our coast surrounded theirs for 120 leagues from Scilly to the Maas in Holland one way, and as many from the Orcades thither the other way; and the wind blowing above three-quarters of the year westerly on the coast of England, made all our cape lands and bays very good roads for ships to anchor at, so that converting our fisher-boats into vessels of war, we could with them only, readily and speedily, put a stop to all your trade from France, Biscay, Portugal, Spain, the Mediterranean, Barbary, etc., or force you to a circumnavigation round Ireland (as your East India ships) from all those places home; and having Ireland to clean ships at and victual could easily intercept your ships that way also."

It is, indeed, to the period of these Titanic struggles with the Dutch that the naval advisers of the Government should turn for guidance in the selection of a suitable strategic base in the North Sea, and it is impossible to study the operations of that quarter-century of almost uninterrupted conflict for the command of the sea without realising that the victories we won and the defeats we sustained alike point with no uncertain hand the direction in which our energies should to-day be expended. No position has ever in history received more complete strategical vindication than did the Nore in those wars. It was the point from which the fleet during the greater part of the period drew the whole of its supplies, and

from which it launched forth to strike at the power of the enemy, whether represented by his fighting fleets or by that great stream of commerce by whose unbroken flow alone he was enabled to carry on the struggle; it was the point upon which the fleet was based when it blockaded the Dutch squadrons in their harbours; it was the point to which ships damaged in the North Sea were always, when possible, sent for repair—since it was the nearest to the scene of action, and ships were not only able to reach it with the *minimum* of risk, but were able to resume their places in the fighting fleets with the least possible delay. Because Germany is more vulnerable through her commerce than the United Provinces were; because there will be terrific fleet actions in the North Sea when at last she throws down the gage; because the Nore is the nearest of all British ports to the German naval bases; and because time is of greater importance in naval warfare than ever it was: for all these reasons it is the Nore that should receive all the attention which the Admiralty may deem essential for the provision of a primary strategic base in the North Sea.

There is another phase of this question to which, although the circumstances are little likely to be repeated, a good deal of interest attaches in view of Germany's known military ambitions, and which, so far, at least, as the east coast is concerned, effectively disposes of the argument, or statement, that never should a repairing base and a strategic base be coincident. An incident occurred during the second Dutch War which proves that when a port possessing strategical merits is situated on a coast liable to oversea invasion, it is of considerable benefit, and may even be of vital importance, to have means at hand, at the same port, for the rapid repair of damaged ships.

The event referred to occurred after the English fleet had been worsted in the bloody four days' fight (June, 1666), when Albemarle and Rupert withdrew their shattered forces to Sheerness. In the action we had lost ten or eleven ships and nearly 600 men killed, besides 1100 wounded and 2000 prisoners. The rest is best described by Colomb in his *Naval Warfare*:—

"The Dutch had so far gained a victory, but they were under the impression not only that the victory was more complete, but that its effects were more permanent and far-reaching than they really were. In their mistaken view they not only hurried their fleet of sixty sail out of the Texel on the 25th of June, but prepared with it a fleet of transports carrying troops, in order to make a descent on our coasts, having by their victory, as they supposed, secured themselves from interruption at sea. With this fleet, considerably reinforced from other ports, they appeared at the mouth of the Thames. But at the Nore, to their disappointed astonishment, lay a new English fleet, computed at eighty-eight sail, with fire-ships and ketches. These ships were the repaired and refitted remains of the beaten fleet, with additions, all collected and approaching completion, by the great exertions of Sir William Penn. The Dutch hopes were entirely frustrated by this unexpected sight, and they found themselves reduced to carrying out the simple operation of blocking the Thames, which they did until the 19th or 20th of July, when the English put to sea after them."

If there had been a strategic base north of the Nore, without repairing resources, and if the battered English ships had withdrawn to it instead of to the dockyard ports of the Medway, nothing could have saved us from invasion and, probably, disaster. It is the same to-day.

So long as there is a respectable naval force in the North Sea, ever threatening to emerge on the flanks of an invader, no matter whether that fleet be "instantly ready" or not, so long shall we be free from the possibility of invasion; but if ever that force is withdrawn, or neutralised either by being destroyed or by being defeated and driven into a harbour where there are no resources for its refit —where it can do nothing but stew in the juice of its strategic base—then invasion becomes an ever-present probability.

The greatest humiliation which England suffered during the Dutch wars—the destruction of Sheerness and of the ships in the Medway in June, 1667—was only possible because, apart from the policy of laying the ships up, which courted disaster, the defences of Sheerness were insufficient and incomplete. There will always be a possibility of the recurrence of a disaster of this description so long as our North Sea fleet falls short of readiness for instant action.

The capacity of the naval ports at the Nore for discharging the functions that will inevitably be thrown upon them in the event of war with a northern European Power cannot yet be described as satisfactory. Sheerness for some time has been in course of development as the principal destroyer base for the British Navy; but little has been actually accomplished beyond the extension of two docks (there are five altogether), and the extension and specialisation of the stores. Chatham, of course, is on a much larger scale. Some seven thousand men find employment there, compared with less than one-third of that number at Sheerness, and it possesses five docks large enough to take any ship of the Navy smaller than the *Dreadnought*, and four others for smaller craft. It is

interesting to observe that the new dock at Chatham is nominally large enough to accommodate the *Dreadnought;* but that, since the lock by which access to the dock is gained is too small to allow of the passage of that leviathan, we are in the unfortunate position of having not a single Government dock on the east coast capable of accommodating a vessel which bids fair to be the standard from which the majority of British battleships henceforward will be constructed.

Before the Rosyth scheme took possession of the last Administration, it had been decided to extend the Medway yard, and to make it equal to the increasing demands of the fleet and the steady growth of the individual ship, and the plans were so far advanced that the necessary land was bought and plans prepared. Then came the Rosyth chimera; and instead of the Nore ports being made to respond to the changing strategical requirements of the Navy, their complements were, in two years, reduced by 3228 men, representing more than twenty-eight per cent of the total number employed.

There are signs, however, that this retrogression has reached its lowest point; but much will have to be done, besides restoring the *personnel* to its old standard, before it will be possible to regard our North Sea bases as adequate to the needs of the fleet. The entrance to Sheerness harbour is obstructed by a bar which makes it impossible for big ships to enter except for an hour or so at high water; while the docking arrangements at Chatham are not such as to allow of the entrance of a Dreadnought. An old channel into Sheerness has recently been rediscovered, however, and this is to be dredged to a depth sufficient to allow of the passage of the largest ships at half-tide, and it is believed to be the intention

of the Admiralty also to put the splendid establishment at Chatham on a footing which will permit the largest ships to be dealt with there.

Artificially maintained channels, however, are, as a rule, far from satisfactory. When that at Sheerness is once dredged it will not again silt up, being composed, not of sand, but of marine animal and vegetable growths from which the channel would be kept clear by the constant passage of shipping. On the other hand, the channel up the Medway necessitates—or did, until it was left to itself—the constant employment of dredgers, even to keep the channel navigable for an appreciable period at high water. Now, in war time, the vessels most in need of making Chatham dockyard will be those which have received injuries on or below the water-line, and which, in consequence, are down anything from one to eight or ten feet below their normal draught. The cost of dredging and keeping open the shallow six miles of the Medway at forty feet at high water so as to allow a ship requiring that depth to pass over the sill into the locks, would be prohibitive; and the only alternative, and a far better one from every point of view, is the provision of floating docks in the lower reaches of the Medway, in the near neighbourhood, say, of Port Victoria. The arguments in favour of the floating dock as against the granite structure are unanswerable. Its cost is less than one-fifth of that of a granite dock of similar capacity, it can be built in one-seventh of the time, and it can be moved about according to the necessities of the moment. The only argument against it is that it has a life of only about forty years; but forty years is a long period when measured by the advances made in the science of ship-designing. In 1867 our biggest ship was the *Minotaur*, of 10,690 tons, with a

length of 400 feet and beam 59½ feet; in 1907 we have advanced to the *Dreadnought*, of 17,900 tons, with a length of 520 feet, and 82 feet beam. Even she displaces little more than half the tonnage of the new Cunarders, *Lusitania* and *Mauritania*. Is there any likelihood that a dock, graving or floating, built to-day to accommodate the *Dreadnought*, will accommodate the battleship of forty years hence? And if there is not, is it not wise to keep pace with the times with the floating dock, rather than with granite structures costing five times the money? Whichever be built, a new one will be required as soon as the ship outgrows it, and if a floating dock has been built in the first place, the loss is only one-fifth of what it would otherwise have been. There is now not a single Government dock on the east coast that will accommodate the *Dreadnought*, and the Admiralty might well consider whether the time is not ripe for giving the new system a thorough trial. If the old system be adhered to, it will be five or six years before we can dock a *Dreadnought* on the east coast.

The mania for breaking new ground for naval purposes seems to have had a fair grip of the late Government. They blundered at Gibraltar, they blundered at Rosyth, and they have blundered at Dover as badly as anywhere. There was absolutely no justification whatever for the expenditure of a sum of three and a half millions sterling on the construction there of an enclosed harbour 610 acres in extent; while the costly mistakes that have been made both by the Admiralty in London and by its servants at Dover will probably result in a considerable addition to the original estimate of the cost. The date of completion as given in the original Act of 1903 was the financial year 1907–8. After two years of time and two

and a quarter millions of money had been expended, the announcement was made that it was "probable that the work will not be completed until 1908–9." In the House of Commons in April last, Mr. Lambert, Civil Lord, described it as "a work he hoped to see finished in 1910." So far there has been no word of increased expenditure; but since two and a quarter millions were spent in two years it is hardly to be expected that the remaining one and a quarter millions will last out the remaining five. Besides, how much material has been wasted, and how much work has had to be done twice over, owing to incompetent workmanship and inaccurate calculation on the part of some highly placed official or officials? Precisely how much was lost through the inability of the Admiralty to appreciate the fact that the tide at Dover rises nineteen feet at springs? How was it that they did not realise until the last moment (modifying their order with a hurried telegram to the contractors) that a four-inch mooring cable would not pass through a buoy designed for a three-inch cable? Truly did Lieutenant Carlyon Bellairs say in the House of Commons a few months since: "Three hundred years ago all the inns and alehouses in the country were taxed for the benefit of the decayed haven of Dover, and ever since then we appear to have been engaged in chucking money into the sea there." It is an ironical reflection that although the new enclosure was originally designed as a "national harbour of refuge," when it is completed ships will be unable to enter it in heavy weather without serious risk of disaster, and in good weather only at certain states of the tide.

Every considerable military object which was sought by the artificial harbour at Dover was already effected far more satisfactorily by the natural harbour at Sheerness.

All that was wanted was a small haven for destroyers and submarines to act from in attacking any hostile fleet that might try to break through from the North Sea into the Channel; and even then it is doubtful whether the advantages for this purpose of Dover over Sheerness are sufficiently great to have justified the expenditure that would have been required. For submarines, at all events, it is useless, for these craft are powerless in face of the seven-knot current that swirls round the entrances. However, the new harbour will shortly be an accomplished fact—barring the discovery of more errors—and the naval defence of the country will be enriched by the provision of a "harbour of refuge" that cannot be entered when a refuge is most required; which, at the present rate of artillery progress, will be within easy range of the French coast in ten years or so; and which may yet prove a fatal trap for an unwary admiral.

VIII

GERMAN NAVAL BASES

ONE of the greatest obstacles with which the German people have had to contend in the creation of that navy which has now given them a place amongst the three most considerable maritime Powers of the world is the lack of ports suitable for development as naval bases. It is true that in Kiel she possesses one of the finest natural harbours in Northern Europe, and so long as she was content with the position laid down for her during the military regime at the Admiralty—so long as she was willing to regard her fleet as an instrument purely of defence—Kiel was doubtless an admirable station for that fleet. There are few harbours where a fleet could lie up in greater security, or where the strength of an attacking enemy could be more effectively sapped by passive obstructions than in the approaches to and neighbourhood of Kiel.

But Kiel stands upon an inland sea, and the disadvantages inherent in such a position began to be realised as soon as the wider horizon of sea-power and expansion oversea opened itself out to the prescient and ambitious gaze of Bismarck and his contemporaries. The great Chancellor dubbed the Baltic "a hole," and, in such spare moments as military and political affairs allowed him to devote to the subject, endeavoured to secure for the German Fleet a base on the shores of the open sea, from which its officers and men could look out across those

waters which it has become the hope of a later generation to dominate. Not that Germany had always been content to see her fleet "bottled up" in the Baltic; the great Elector, Frederick William, had struggled hard to release it from the limitations thus imposed upon it, and had endeavoured to secure Emden as a North Sea base for the Brandenburg fleet; but he was unsuccessful, and the dreams of oversea empire which he had cherished died with him, not to be resuscitated until the insatiable appetite of a united Germany, having reached the limits of territorial expansion, turned her covetous eyes again to the rich harvest of the sea, reaped by England undisturbed now for a century.

It was in 1853 that the first great step was taken. In that year five square miles of territory surrounding the bay of Jahde was purchased from the Duchy of Oldenburg for 500,000 thalers, and three years later was commenced the construction of the dockyard and arsenal which is now the head-quarters of the German naval forces in the North Sea. It has been a very expensive business, for here, more perhaps than anywhere else, the natural disadvantages of the German coast-line have made themselves felt; but the task has been pursued with that persistence and determination which is characteristic of the whole of German policy, and although Bismarck himself was at one time strongly in favour of abandoning the works there in favour of Geestemunde, at the mouth of the Weser, Wilhelmshaven has now definitely assumed the position of the most important, if not as yet the most complete, war port in the German Empire. The dockyard was opened in 1869.

The equipment of Wilhelmshaven cannot at present be regarded as in any way conformable to its responsibilities.

The number of employees is just under 8000, and the building capacity is represented by only two slips, one of 600 and the other of 345 feet in length. This is, perhaps, a minor point, since the resources of the private shipbuilding yards at Hamburg, Kiel and Stettin are fully capable of keeping pace with any development of the fleet that can be looked upon as probable, or even possible. More important in a port so situated—and it is the only Imperial yard on the North Sea front—are the facilities for the maintenance and repair of ships, and in these matters Wilhelmshaven is but indifferently provided. The three docks already in existence are of the following dimensions:—

Length.	Breadth.	Depth on sill at high water.
478 ...	72 ...	27½ feet.
478 ...	72 ...	27 ,,
370 ...	61½ ...	22 ,,

Not one of these docks is capable of accommodating even the latest completed battleships of the German Navy, and the earlier vessels can only be entered after they have been considerably lightened. The ships of the Braunschweig (1902) and Deutschland (1904) classes are all seventy-two feet in beam, and have a maximum draught of twenty-eight feet or thereabouts; and since these vessels do not exceed 13,200 tons in displacement, it is easy to see that very great additions to the docking accommodation of the port must be made to enable it to cope satisfactorily with the new 19,000-ton ships now under construction. As a matter of fact, operations to this end have already been commenced, and three docks are now under course of excavation which will accommodate any warship building.

They are from five to six hundred feet long and one hundred feet wide. One will be completed during the present spring, and the others are expected to be ready by June or July this year. In addition to these, Wilhelmshaven is provided with three small floating docks for torpedo craft, besides the "haul-up" arrangement for dealing with these vessels, which is a feature of all German yards.

In the natural course of things, the abandonment of the defensive as the be-all and end-all of the German Navy was bound to lead to the supersession of Kiel as the primary head-quarters of the fleet, and there is no doubt that, as soon as the present works have been completed, Wilhelmshaven will step into the position now so unsatisfactorily—from a strategical point of view—filled by the Baltic port. The contemplated transference of the fleet head-quarters has rendered necessary the undertaking of a project for deepening the harbour upon which Wilhelmshaven stands. Even the 13,200-ton battleships have frequently found it impossible to enter it, and on one occasion, in 1906, the Emperor himself was delayed on a voyage to Heligoland in consequence of the fact that the water over the entrance to the harbour was not deep enough to allow of the passage of his flagship. The proposed deepening will be a task of some years' duration, however, and until then the larger vessels of the German Navy—and certainly all of those now under construction—will be confined to the Baltic ports and, possibly, the Elbe. When the Jahde has been completed it will take over its new duties. The facilities for repair will be greatly augmented, and the *personnel* will be increased to about 14,000, while the torpedo craft now based upon the port will be transferred to Emden.

This flourishing commercial port, situated at the mouth of the Ems, and some thirty miles west of Wilhelmshaven, forms the left or western arm of the chain of naval bases which Germany has provided on her North Sea littoral. It is not an ambitious port, it has no docks and no defences; but in the plans which have been made for the disposition of the German fleet in the near future it is marked down as the head-quarters of the torpedo flotillas. Between Emden and Wilhelmshaven runs the little Ems-Jahde Canal, not large enough yet to allow of the passage of torpedo-boats, having a depth of only 2 ft. 9 in., but in course of enlargement to permit the largest destroyers to traverse it. When this work has been completed there will be no need for docks at the western port, since vessels in need of that attention will be able to reach the dockyard at Wilhelmshaven in two and a half or three hours without touching the open sea at all. It is sound policy to make Emden the primary torpedo base, for it is the nearest of all German ports to the English coast, and the first requisite for successful torpedo operations is that the attack should be made from a point as close as possible to the objective.

On the other side of Wilhelmshaven, on the left bank of the estuary of the Elbe, stands the third of Germany's North Sea ports, Cuxhaven. This place is one of the most strongly fortified on the whole of the German coast, and stands in relation to Hamburg very much as Sheerness does to London, as it is of at least equal importance *if* there is any possibility of German commerce being attacked at its principal point of concentration at the mouth of the Elbe. Whether this really is a probability is very doubtful, for Germany intends to save it from such attack by confining her shipping to her harbours. How-

ever, Cuxhaven is the head-quarters of the Mining Division of the German Fleet, and no one who followed with any care the proceedings at the recent Hague Conference can entertain any doubt that Germany attaches great importance to this branch of naval warfare, and will do all in her power to make the greatest possible use of the mine, without limiting herself by one iota because of possible damage to neutrals. There are five vessels attached to the training school at Cuxhaven, details of which will be found in the Appendix, and the training is carried out with a thoroughness and a total disregard for the limitations imposed by International Law that are in themselves eloquent of the confidence reposed in the efficacy of the mine by the authorities. At Cuxhaven, as at Emden, there are no docks, but at Hamburg, sixty-five miles up the Elbe, are resources fully capable of meeting any demands that the Imperial Navy is likely to make. They comprise two floating docks capable of accommodating vessels of 36,000 tons, and a graving dock, which is complete, to take vessels of the Dreadnought type. A similar dock exists at Bremerhaven.

The plans for the transference of the greater part of the Navy to the North Sea include the development—which is already well advanced—of Brunsbuttel, at the mouth of the Kiel Canal, as a first-class repairing base. A dock capable of accommodating the largest type of warship is under construction, and a commencement has been made in the building of workshops, etc., on a scale which indicates the existence in the near future of an establishment much larger than that at present contemplated at Rosyth.

With these four ports the Imperial yards on the North Sea are exhausted, although Bremerhaven, close to the

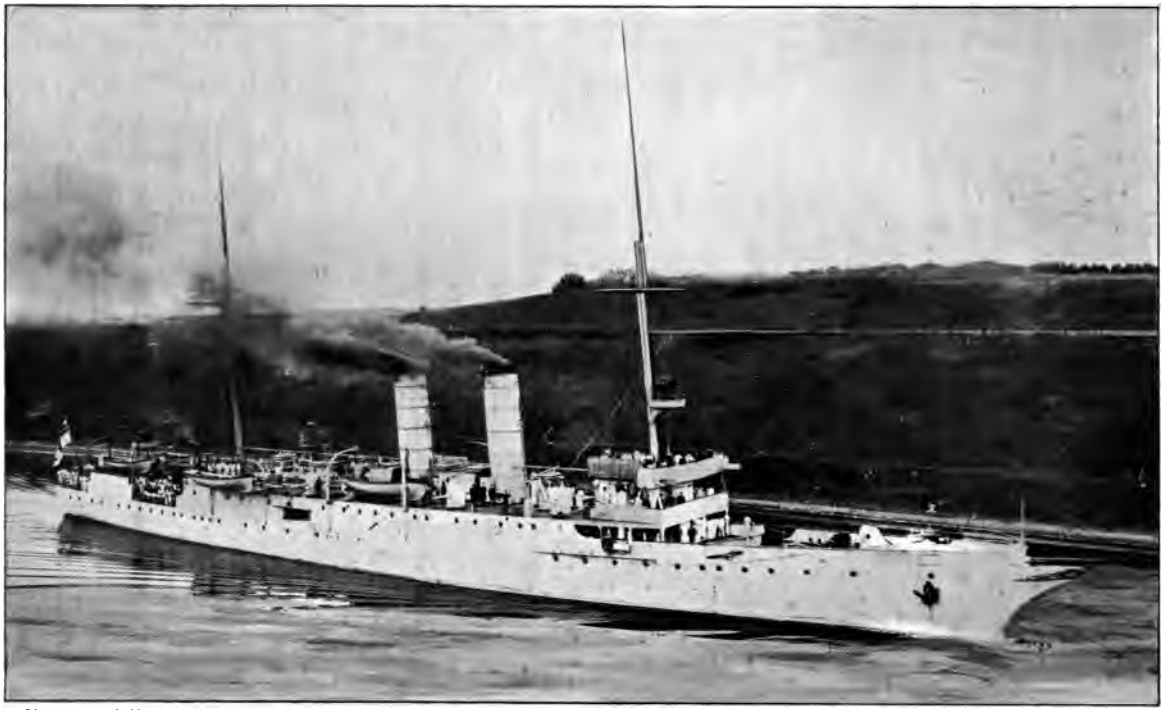


Photo. Renard, Kiel

S.M.S. NAUTILUS. MINE-LAYER
Sister ship: *Albatross*

spot where Bismarck wished to see the western headquarters of the fleet, is frequently used as a temporary base for torpedo craft. The principal war port is in the Baltic, just as ours are in the Channel, and the desire of Germany to transfer the importance of Kiel to Wilhelmshaven is as natural as the desire on our side to transfer some of the importance of Portsmouth or Devonport to Rosyth or the Nore. Strategic suitability is the first requirement of a naval base.

Not even excluding our own Channel ports, Kiel is probably the best-equipped naval station in the world. In addition to the extensive Imperial yard, the town contains the great private establishments of the Krupp and Howaldt companies, with an aggregate staff of some 16,000 men; and whatever may be the development of Wilhelmshaven as a strategic and repairing base, there is no reason for doubting the permanence of Kiel as a shipbuilding centre. The harbour itself is about four miles long and half a mile in width, and the following is a list of the building slips available in the three yards:—

I. THE IMPERIAL YARD
1 of 600 feet.
2 of 427 „

II. HOWALDT YARD
3 of about 500 feet.
5 smaller.
3 building.

III. KRUPP'S (GERMANIA) YARD
4 of about 500 feet.
9 smaller.

Unfortunately the docking accommodation bears no comparison with this list. There is no dock in the

Germania yard, and only one small patent slip in the Howaldt yard. In the Imperial yard are the following:—

Length.	Width.	Depth on sill at high water.
423 ...	71 ...	28 feet.
382 ...	70 ...	25½ „
362 ...	64½ ...	22½ „
334 ...	67 ...	16 „

Besides these, two have recently been completed which will take any ship in the German Navy, while there are also two floating docks, one 500 by 90 by 35 feet, which will take any warship yet designed for any navy (for the length of a floating dock is not the limit of its capacity, since the ship may overhang at either end), and one with a lifting capacity of 3000 tons. The number of men employed is about 8000.

There is a secondary naval base at Danzig, where there are two small floating docks and three patent slips for torpedo craft, while it is proposed to build a dock large enough for any warship. At Sonderburg is the headquarters of the gunnery training establishment.

One of the greatest strategic assets of the German Navy is the Kaiser Wilhelm Canal, which connects the Baltic with the North Sea and enables a concentration to be effected in either of those waters without the necessity of circumnavigating the Danish peninsula. This is a double advantage, for not only does it save considerable time, but also obviates much risk, for the narrow passages into the Baltic present very favourable opportunities for the employment of submarine mines. At the same time, however, it is doubtful whether the strategic value of the canal is sufficient to justify the expenditure of such large sums of money as will have to be spent upon it in order that it

may keep pace with the development of naval architecture. It is extremely unfortunate for Germany that she has no port outside the Baltic that is not well within the range of British torpedo flotillas based upon Sheerness or Harwich, and therefore liable to attack by these craft immediately on the outbreak of war, and it is this deficiency which gives to the canal one of its greatest values. A fleet may be kept in the Baltic and so immune from such an attack; but in escaping from one danger it would be laying itself open to others equally as serious. With our present superiority over Germany in all classes of ships, it is difficult to see what could prevent a British squadron from destroying the southern entrance to the canal, and thus compel any fleet that might be at Kiel to run the risks of a passage through the Belt. The question evidently strikes the German authorities in a different light, for it has been decided to enlarge the canal at a cost of more than £10,000,000. It was commenced in 1887, and formally opened by the Emperor William on June 20, 1895, and cost in the first place £7,800,000, so that the extension is estimated to cost considerably more than the original work. The canal is about fifty-seven miles in length, and the widening has been rendered necessary by the fact that even the 13,000-ton battleships of the Braunschweig class are nearly nine inches broader than the sill of the canal, which would therefore be totally impracticable for the new ships now under construction. The depth of the canal is to be increased from 29 ft. 6 in. to 36 ft., and the width of the sill from 72 ft. to 144 ft. The course of the canal will remain essentially the same, and the widening is, as far as possible, to be confined to one bank, in order that traffic may not be interfered with. The plans have further been so arranged that additional extensions may

easily be carried out should the necessity arise. In spite of the undoubted advantages that will accrue from the work, however, few will deny that such a huge sum of money could have been spent in many ways more favourable to the expansion and exercise of German sea-power. In the field which has been opened up for the future work of the German Navy, Kiel has little real value except as a harbour of refuge from which effective sorties will be difficult, if not impossible; and Germany, like any other commercial Power, will be in sore straits indeed when her fleet has to fly for safety to such a port.

At the end of 1907 the German Government decided to undertake the construction of another canal, to connect Wilhelmshaven with the Weser. This work will be about 34 kilometres long, and its object is to enable ships to pass between Wilhelmshaven and the sea in the event of the bay of Jahde being blockaded.

Some reference must also be made here to the island of Heligoland, which was ceded to Germany by the British Government in 1891. In Germany this island is regarded as a point of great strategical importance. It is said that it covers the mouths of the Weser and the Elbe, and therefore acts as a protection to the important maritime trading centres of Hamburg and Bremen, but the claim is based upon a total failure to grasp the strategical position in which Germany, unfortunately for herself, is placed. In the event of war with England, German commerce, as has already been shown, is not likely to be attacked in the North Sea—there will be no attempt to establish a commercial blockade off the mouths of the Weser and the Elbe. Germany's sea communications will be cut at the mouth of the Channel and off the north of Scotland far more effectively and with infinitely less danger to the

attacking squadrons than if the attempt were made near the treacherous German coast and within the radius of the torpedo-flotillas at Wilhelmshaven and Cuxhaven. It is further claimed that by "protecting the Kiel Canal," Heligoland renders possible, under any circumstances, the junction of whatever forces may be at Kiel with those at Wilhelmshaven, which otherwise might be prevented by the destruction of the North Sea exit from the canal, or by the interposition of a strong naval force between it and Germany's principal North Sea port. How an isolated fort, fifty miles from Brunsbuttel, where the canal emerges, and commanding no channel leading to it, is to prevent a hostile fleet from approaching that place, or from getting between it and Wilhelmshaven, is not stated, nor does it appear to have been considered. So far as its fortifications are concerned, Heligoland can simply be ignored by a hostile squadron. There is no reason why ammunition should be wasted on them, unless the place should be regarded a convenient *point d'appui* for flotillas of light ships acting on the German coast-line. It cannot be used as a base for big ships, since the depth of water in the "harbour," which is the space between Heligoland and the islet of Dune, is no more than twenty-two feet. Early in the present year the Reichstag voted £1,500,000 for the development of a torpedo base in the island. This is, perhaps, the one *rôle* for which it is fitted; but even then it suffers under the disadvantage that it can very easily be cut off and "contained" by a superior force.

It will be seen from the facts recited above that Germany has had to contend against tremendous obstacles in the development of her naval bases; and even when she has perfected them as far as her resources and her ambitions allow, one cannot resist a sentiment akin to sympathy for

her in the unfortunate geographical position in which nature has placed them, and which no amount of human toil can overcome.

The conditions that existed when England and Holland fought for maritime supremacy in the seventeenth century have been fully discussed in the previous chapter. Germany occupies practically the same position relatively to England as the United Provinces did in those days, and her dependence upon oversea trade is even greater. The annual value of her oversea commerce is £372,000,000, and of this total £294,000,000 are carried in German merchant vessels of 3,000,000 tons gross register, valued at over £40,000,000 and manned by 60,000 seamen. Ten per cent of the world's commerce and 79 per cent of German sea-borne trade are carried in German bottoms. The value of German trade with the British Empire is over £109,000,000 annually. Germany is becoming more and more dependent every year upon foreign supplies of food for her people, and of raw materials for her growing industries. In the event of an interruption of these supplies she would be faced by a serious economic crisis.

These facts and figures, so eloquent of the growing power of the German Empire, are, and must remain, so long as her navy is inferior to ours, her greatest weakness. By far the largest proportion of German sea-borne trade must reach her from the west. It must pass the coasts of Great Britain, either along the English Channel and through the Straits of Dover, or by the "north-about" route round Scotland; and unless the German Fleet is strong enough to drive the British flag from off the seas, nothing whatever can prevent the grip of England from tightening round the throttles of her trade and squeezing

the life out of them. It is a feature of an Anglo-German war that need not be dwelt upon, for its bearing is obvious to any one who cares to glance at a map.

To the same unhappy circumstance Germany must attribute the fact that unless she can leave the British Fleet *hors de combat* behind her, she will be totally unable to play that game of ducks and drakes with British commerce which has for many years been the favourite bogey held up before the eyes of Englishmen by a certain school of alarmists. To prey effectively upon our trade an enemy must reach our trade routes, and to do that he must first get his cruisers into the open sea. It is true that the greatest nerve of British trade—that of the port of London—concentrates within three hundred miles of the German coast; but when Germany is able seriously to interfere with that, England's hour will have come. Even when cruisers, bent upon commerce destroying, have reached the open sea they cannot maintain themselves unless they have numerous coaling stations—and Germany has none; but putting this consideration to one side, how is any considerable German naval force to reach the sea?

It certainly could not be done *viâ* the Straits of Dover and the English Channel, for in those narrow waters a hostile ship would be the object of attack by every vessel that could float with a torpedo. Even in the first hours of war there would be reserve ships coming up to the North Sea from Portsmouth and Devonport that would make short work of any such microscopic force as might be able to elude the containing battle squadron at Sheerness and the torpedo craft at that port and Dover, while the hundred or so reserve torpedo craft in the Channel ports would leave but little of the hostile forces to tell the story. It may then be taken as certain that no

German force would choose this route to the ocean, whether that force consisted only of marauding cruisers or of a complete battle fleet bent on effecting a junction with an allied Power to the west. There is therefore only one alternative left—the north-about route round Scotland. Now in a previous chapter it has been shown that the distribution of the British Fleet at the present moment is not such as to guarantee that the German Fleet shall not break out by this route.[1] For strategical reasons it has been necessary to base our main fighting squadron in the North Sea on a port that is within more or less easy torpedo-boat range of the German coast; but the clamant strategic necessity for having a force constantly prepared to cut off any force attempting to pass north about is ignored. When steps have been taken to render this outlet impossible the organisation of the British Fleet will be, as near as things human can be, perfect, and the stroke that cuts the threads of German maritime commercial communication with the outer world will at the same time confine the operations of the war, except for the necessary destruction of the few outlying German cruisers by British foreign squadrons, to the 240,000 square miles of the North Sea. That is the pith and essence of the strategy of an Anglo-German war. No German vessel can leave or pass to the west of Dover in the south or of the Shetlands in the north without the consent of Great Britain, and our forces should be so distributed as to enable us to close the passages at an hour's notice. The same distribution which would give us that power would absolutely prevent the possibility of invasion.

These being in outline the main strategical considerations that must govern any war between the two nations,

[1] "The North Sea Amphitheatre," *ante*.

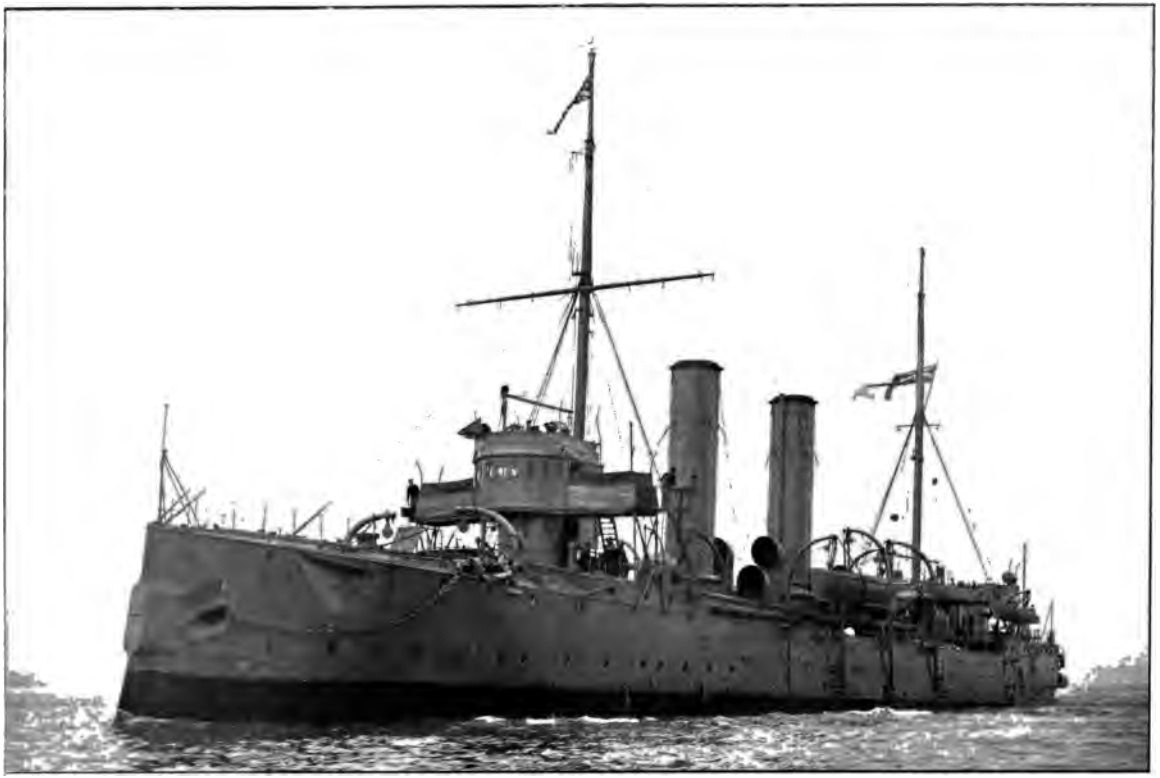


Photo. West & Son, Southsea

H.M.S. IPHIGENIA. MINE-LAYER

the necessary consequences of their relative geographical positions, what is the situation within the confines of the North Sea itself? Before looking closely into this question it is of some importance that the general question of distances should be understood. These have been summarised in the following table:—

Distance from Wilhelmshaven to:	Knots.
Devonport	620
Portsmouth	470
Dover	330
Sheerness	320
Harwich	300
Hull	330
Rosyth	450
Cromarty	510

It is very important to remember in connection with these distances that Wilhelmshaven is practically the only harbour suitable for a battle fleet on the whole of the German North Sea littoral, the only other being the estuary of the Elbe.

Theoretically, no North Sea port is outside the steaming radius of any other North Sea port. At a speed of 10 knots the average destroyer has a radius of about 3000 miles, and since the greatest distance between British and German ports in the North Sea is only slightly over 500 knots, it will be seen that a flotilla could steam out and home at that speed and still have a reasonable reserve of fuel for a spurt at the critical moment. But, on the other hand, 500 knots at such a low speed would take two whole days to cover, and the risk of discovery by the scouts of the objective fleet would be so great that the successful performance of the operation may safely be regarded as impossible. As a general rule, it may be

taken that the required horse-power, and consequently the coal consumption, varies as the cube of the speed. Therefore any increase of the latter necessitates a very considerable shortening of the radius. A 30-knot destroyer has a radius of about 1000 miles at 14 knots, but only about 200 at full power.

The "dash at full speed across the North Sea," so dear to the heart of the sensational war-novelist, is, therefore, an impossibility. True, Sheerness is only some 320 knots from Wilhelmshaven, but after covering that distance at anything like "full speed" a flotilla would arrive with empty bunkers. Nevertheless, the proximity of Sheerness to the head-quarters of the German North Sea fleet is a factor of great importance, and is, at the same time, of far greater advantage to Great Britain than Germany. A German fleet in the North Sea is bound to use as its base either the bay of Jahde or the estuary of the Elbe, either of which could be reached at a speed of 15 knots from Sheerness, and leave the attacking flotilla with a respectable fuel reserve for the actual attack and withdrawal for some distance at full speed. Considering Sheerness alone, Germany is, of course, in the same position—a little better, if anything, since the coal consumption in German torpedo craft is, as a rule, more economical than in our own; but we have a tremendous advantage over her inasmuch as we have the option of using as bases for our battle fleets ports which are well outside the destroyer radius of the German coast.

The distance from Wilhelmshaven to Cromarty is about 510 knots—1020 for the return journey. Allowing for the necessary burst at full speed when approaching before and leaving after the attack, no destroyer could hope to cover the distance at a greater speed than 12 or 13 knots,

so that the journey before the attack would take some forty hours, making discovery and destruction in daylight hours certain.

A flotilla bent only on the destruction of the enemy's fleet and caring nothing for its own safety would naturally run less risk of discovery owing to the greater speed at which it could move; but even so it could not avoid being at sea through the whole of one day, since 20 or 21 knots would be about its limit for the 500 miles, allowing for a short run at full speed at the end. There could be no question in such a case of coaling at sea, for the war area would be swarming with British scouts.

Cromarty may, therefore, be looked upon as outside the range of torpedo flotillas on the German coast, and a fleet in the Firth immune from their attacks. On the other hand, a flotilla leaving Wilhelmshaven at dusk could reach Sheerness at dawn—the hour which is generally regarded as the most favourable for these attacks. It should be noted in passing that the idea of delivering the actual attack at high speed is falling into some disfavour. The risk of discovery at slow speeds is much less, owing to the more complete absence of noise, flaming from funnels, etc.

Germany's naval ports in the North Sea are within comparatively easy reach of destroyer flotillas at Dover, Sheerness, Harwich, and the Humber, and so long as they remain in the North Sea they cannot effectively get out of their reach. Up to that point honours are easy; but German torpedo craft could not harm a fleet at Cromarty. A flotilla sighted by fast scouts—either "scouts" or destroyers—on approaching a point so far distant from its base, would have no chance of escape, since the depleted condition of the vessels' bunkers would make it impos-

sible for them to keep up a high speed for a sufficient length of time.

To this advantage which Cromarty possesses must be added that of its strategical position. It commands the north-about route—the only possible outlet for Germany into the open sea if she were at war with us, since the English Channel would be too warm with torpedo craft and submarines.

At the same time it would be bad policy to station the whole of our battle forces in the north and the whole of the destroyers in the south. The strategical need for a battle fleet at Sheerness has been discussed in a previous chapter, and remains not seriously affected by the questions here dealt with. It is of vital necessity, however, that the screen of destroyers attached to the Nore should be immediately strengthened, and that considerable additions should be made to the ludicrously inadequate land batteries of quick-firing guns by which the approaches to Sheerness harbour are defended.

IX

FLOATING DOCKS

IN the two preceding chapters brief reference has been made to the floating dock. The whole question of docking accommodation has been vested with such vital and urgent importance by the great developments of naval architecture in recent years that it will be advisable in a short chapter to look into the question of floating docks more closely. The fundamental fact to be faced is this, that in spite of the great importance which the North Sea now holds in the maritime outlook of the British Empire, we have not, on our whole North Sea coast, more than one dock which is capable of accommodating the standard type of battleship in the Navy. The reason for this unsatisfactory state of affairs is, of course, that ships have advanced so rapidly in size in the last twenty years that practically all existing docks have been completely outgrown. In 1887 the largest British warship was 400 feet long, and none had a greater beam than 75 feet, nor a greater displacement than 12,000 tons. To-day we are building armoured cruisers 530 feet in length, and battleships with a beam of 82½ feet, and close upon 20,000 tons displacement. Twenty years ago the largest ocean liner was the *Etruria*, 501 feet long. The length of the *Lusitania* and *Mauretania*, which are auxiliary cruisers, is 785 feet.

The one dock which we possess on the East Coast

capable of docking a Dreadnought is the Stephenson graving dock at Newcastle, which is 700 feet long, 90 feet wide, and 29 feet over the sill. A Dreadnought dock, as stated in a previous chapter, is projected at Rosyth, and another at Grimsby, while there seems also a possibility of such a dock being constructed for commercial purposes at Dover. On the other side of the North Sea things are in a much more advanced condition. There are three Dreadnought docks at Wilhelmshaven nearly ready, one at Bremerhaven and one at Hamburg completed, two at the latter port completing, and one at Brunsbuttel projected. We have not a single national dock for Dreadnoughts on the North Sea, while Germany has three; and we have but two, all told—one complete and one projected—to her eight.

This problem is one of the most important which the Admiralty and the Government have to consider. The expenses attached to its solution are so great and strategical considerations so fluctuating that the claims of any system which promises a considerable monetary saving on that usually followed, and which enables the units composing it to be moved about in the same way as our fleets are, in accordance with the strategical needs of the time, should be most carefully considered. These are the prima facie advantages of the floating dock over the granite dock.

For a ship of the same size, the cost of a floating dock is roughly about one-fifth of that of the excavated dock, or, allowing for occasional difficulties as to situation, such as the necessity for dredging a berth, say a quarter. Another great advantage is in the time required for construction. An excavated dock for a first-class ship takes on an average between three and a half and four years to

build, which may be usefully compared with the following examples relating to the floating dock. A 10,000-ton dock for Havana was built by Messrs. Swan and Hunter, and delivered at that port eleven months after the order was received. An 11,000-ton dock for Stettin was sunk ready to receive its first ship eight months after the receipt of the order. Both these docks were built on the Tyne, and towed to their destinations. The Austrian Government, with little or no experience in such work, constructed a 15,000-ton dock in twenty-three months. On an average, it may be taken that the floating dock can be built in from a fifth to a quarter of the time required for the granite structure.

The floating dock can dock a ship in every way as well as an excavated dock, equally as quickly, and with the expenditure of less power, since while the whole of the water must be removed from an excavated dock whatever the size of the ship to be accommodated, in a floating dock the amount of water requiring to be removed is in direct proportion to the weight of the ships. Further, a granite dock is rigidly limited by its end walls, while cases have occurred of a floating dock lifting a ship more than 200 ft. longer than itself. At first sight it would appear that the granite dock must score heavily in the matter of cost of working and maintenance; but this is not the case. The outside of a floating dock need never be cleaned, and the keeping in order of the interior is generally reckoned to cost between £300 and £500 a year. There is practically no expense under this head where the dock is a granite one; but, on the other hand, the pumping machinery required is much more powerful. For instance, the whole power required for pumping the British Government floating dock at Ber-

muda, in which H.M.S. *Dominion* was docked recently, is only slightly in excess of that required of the leakage pump alone provided for one of the new docks at Devonport.

The greatest point in favour of the floating dock is, however, its mobility, an instance of which—unfortunately a negative one—we have in the North Sea to-day. The strategical requirements of the present time necessitate the expenditure of hundreds of thousands of pounds on the construction of docks for these waters, while at Devonport are a dozen magnificent granite structures which are comparatively useless for the strategical requirements of to-day. Had they been steel floating structures, the east coast could have been made equal to its responsibilities in six months; if the Government determines to build masonry works it will take more than as many years, and then, if the pivot of naval activity should shift again—as there is not the least reason why it should not—the east coast docks will be wasted, and more immobile works constructed wherever the future balance of power may demand them.

This quality of mobility gives the floating dock another great advantage. The position of a granite dock is always fixed, and is shown on charts, so that it would be possible for a hostile vessel, locating its position by means of those charts, to drop shells into it from a position in which it could not itself be injured. Of course, if a shell fell into a floating dock, the damage done would be much greater; but, provided there is sufficient water, it can be shifted about from time to time, so that the enemy would be unaware of its exact position at any given moment.

More than one proposal has been made for the con-



Photo. Symonds & Co.

H.M.S. SHANNON. ARMOURED CRUISER
Displacement: 14,600 tons. Armament: Four 9·2-in., ten 7·5-in.
Sister ships: *Minotaur*, *Defence*

struction of a floating dock that shall be self-propelling, and therefore capable, under favourable circumstances, of accompanying a fleet to sea. Sir William White, the late Director of Naval Construction, has said that he considers the scheme practicable for small docks, such as would be required for torpedo craft; but even without this automobile power the floating dock is sufficiently mobile for all practical purposes. Many of those now in existence have been towed anything up to fifteen thousand miles.

The one essential for a floating dock is ample depth of calm water. The pontoon bottom has to be taken below the keel of the ship to be docked, and as this bottom is, for big ships, about fourteen feet deep, a clear depth of at least fifty feet is required. On the east coast there is, luckily, no difficulty whatever in getting the necessary depth. Along the lower reaches of the River Medway, in close proximity to the dockyards at Chatham and Sheerness, the water attains a depth, even at low tide, of from fifty to eighty feet, so that there are no difficulties to be overcome in that respect.

Great Britain possesses only one floating dock of any considerable size—that at Bermuda, which has a lifting capacity of 16,500 tons nominal and about 19,000 tons actual. They have been adopted far more widely in Germany and the United States, and two are at present building in the former country with a lifting capacity of 36,000 tons—one at Hamburg by the Vulcan Company for their new works there, and the other by Messrs. Blohm and Voss for their yard. The following figures show clearly enough that the floating dock is rapidly growing in favour. In 1897, the Admiralty Dock Book showed that there were then in use 143 floating docks, with an aggregate lifting power of 307,882 tons. In the 1905

edition of the same work the number of docks has increased to 196, an addition of some 30 per cent, whilst in lifting power the figure has risen to 631,710 tons, an increase of over 100 per cent.[1]

[1] For much of the information in this chapter acknowledgment must be made to the addresses of Mr. Lyonel Clark before the Institution of Civil Engineers (Jan., 1905), and the Institution of Naval Architects (March, 1907).

X

THE INVASION OF ENGLAND

THE possibility of a hostile army being landed on the shores of England is a problem that has exercised the minds of naval, military, and political strategists for centuries, and the discussion will probably continue until the question is answered for us in fact. Until ten years ago we were continually faced with the paper possibilities of a French army being landed on our southern coasts, and the periodical scares were always treated with a good deal of respect. The changes of the last decade, however—our improved relations with France and the growth of the German Fleet and, particularly, of German ambitions—have brought in their train a change in the quarter from which this military enterprise is expected; but it is a remarkable fact that—in spite of the greater strength and efficiency of the German Army as compared with the French; in spite of the more vital spirit of enterprise and determination which animates the German people; in spite of the instinct for organisation which characterises Germany as it characterises no other nation on earth; in spite of the greater transport resources which she possesses; in spite of the fact that the danger has been admitted by representatives of the Government in the British House of Commons—in spite of all these things, the possibility of an invasion by Germany is not treated with anything like the seriousness

that was wont to be accorded to the French flat-bottomed boat fantasies with which England was regaled down to the closing years of the nineteenth century.

The explanation of this curious indifference is difficult to arrive at. In all probability it is due to what are known as "Blue Water" principles overreaching their mark. The great revival of interest in sea-power, and, unfortunately, of belief in the omnipotence of sea-power, which dates from the publication of Mahan's *Influence of Sea Power upon History*, has led to the general conviction that the possession of a powerful fleet banishes the invasion of England from the scheme of "practical politics." In May, 1905, Mr. Balfour, the then Prime Minister and Chairman of the Committee of Defence, declared in the House of Commons that "a serious invasion of these islands is not a probability which we need consider"; but one need only turn to Mr. Robertson's justification of the redistribution of the fleet,[1] early in 1907, to be convinced that either there is considerable diversity of opinion on the question, or that events had happened in the meantime to compel the rulers of the country to change their mind. "Sea-power" in the abstract: a strong and efficient force of battleships, cruisers, and all the other factors which go to make a modern war fleet, is a very potent and desirable thing; but unless it is organised and distributed with a single eye to the greatest immediate danger it is not a guarantee against it. The British Fleet is not organised on a basis which puts a German invasion of our shores beyond the pale of things to be considered.

[1] See chapter VI. Mr. Robertson used the word "raid," but it is obvious that he intended it to be taken in its widest sense and to cover the more serious operation of invasion.

England has not been invaded for nine hundred years. The last attempt was made by Napoleon in the opening years of the nineteenth century, and he failed because he was unable to secure the command of local waters for the requisite time. Since he failed in 1805 owing to the superiority of our fleet, the superiority of our fleet to-day is sufficient guarantee against any violation of our shores. These are the stock arguments of the *non possumus* school, and they have been fed, in one way or another, by almost every experienced writer who has dealt with the subject in recent years, with the exception of the retired officers of the German General Staff. Few English writers have made any allowance for the new conditions which exist in the twentieth century, and in cases where they have been referred to they have as a rule been dismissed with the assurance that such conditions, since they affect both sides equally, in no way alter the relative positions of England and her possible enemies from the satisfactory relations of a hundred years ago. Little or no discount is made for the incompetence of Napoleon's lieutenants afloat, for the fact that his invasion scheme was germinating openly for three or four years, or for the fact that it is seriously doubted whether Napoleon ever really intended to essay the invasion at all.

It is strange that the discussion of history as it affects the invasion question has centred around the Nelsonian era to the practical exclusion of all the other illustrations which history has to offer. Two such illustrations may be given here, both of which belie the complacency with which the invasion question has come to be regarded. From the numerous occasions on which weather has served us—and they are many—the expedition of Hoche to the south-west coast of Ireland in 1796 may be

selected as more or less typical. Colonel Callwell[1] thus describes the incident :—

The bulk of the armada reached the mouth of Bantry Bay unmolested by the British fleet. But the wind, which had favoured the voyage thither from the shores of Brittany, was foul for running up the narrow gulf. Neither commanders nor crews of the French vessels were equal to the problem of beating up the Bay, a task of uncommon difficulty, even for a fleet in the highest state of efficiency. And the ship which Hoche himself was in having gone astray, the expedition returned to the French coast baffled, after the strategical difficulty of approaching the shores of Ireland without being set upon by the formidable naval forces gathered under Bridport in the Channel had been overcome.

The project failed primarily because of bad luck in the matter of weather; the unsatisfactory condition of the naval element had something to do with it, too; but the superior British fleet in the Channel had "no effect upon the venture."

For the other instance we go much further back in history, to the very beginnings of the British Navy. During the successful revolt against the Roman dominion of Carausius, who, at the head of a large fleet, had been made "Count of the Saxon shore" and invested with the duty of suppressing the pirates of the North Sea, the fleet of the expatriated Franks which was coming up from the eastern Mediterranean through the Straits of Gibraltar to join Carausius was met and obliterated by the Roman fleet under Constantius. The Roman then made preparations in Gaul for the invasion of England, and while he was so engaged Carausius, who had proved himself a

[1] *Military Operations and Maritime Preponderance.*

capable naval commander and a worthy ruler of Britain, was murdered by "one Allectus, his familiar friend, who thereupon assumed the purple, though not master of one of Carausius's good qualities to countenance his presumption."[1] Constantius rapidly pushed his preparations forward, and "the attack was (A.D. 296) at length made by the principal squadron, which, under the command of Asclepiodatus, an officer of distinguished merit, had been assembled at the mouth of the Seine. So imperfect in those times was the art of navigation that orators have celebrated the daring courage of the Romans, who ventured to set sail with a side wind, and on a stormy day. The weather was favourable to their enterprise. Under the cover of a thick fog they escaped the fleet of Allectus, which had been stationed off the Isle of Wight to meet them, landed in safety on some part of the western coast,[2] and convinced the Britons that a superiority of naval strength will not always protect their country from a foreign invasion."[3]

This incident has received less attention at the hands of British historians than its importance merits. By most it is ignored; by Sir George Clarke the ultimate success of Asclepiodatus is attributed to the welcome which the inhabitants of the country extended to him, though they could have made no more effective an opposition to the Roman soldiery than the British army could to-day to a German force, if such were landed on our eastern coasts. It is permissible to believe that the venture was, to some extent, aided by the weather conditions, which enabled the invading army to cross and land without molestation;

[1] Burchett's *Naval History*, 1720.

[2] An error. The principal landing was made in Kent, but one division of the fleet, which had parted from the remainder in the fog, found itself in the Thames and pushed on to London.

[3] Gibbon's *Decline and Fall of the Roman Empire*.

it is equally important to remember that there is no evidence to show that Asclepiodatus wished to avoid a naval engagement, though he naturally would not seek one. Most important of all, Asclepiodatus landed his army "before Allectus had any certain intelligence of his being put to sea." Possibly that was the worst fog with which the English commander had to contend, since his force is supposed to have been superior to the invader's. It is certainly the most serious with which England has to deal to-day. Atmospherical fogs are bad enough, though the invader, in these days of giant shipping, might find them as awkward as his intended victim; but there are worse to be considered. There is the fog of false intelligence, and the fog of no intelligence at all. There is the mental fog of indifference and incredulity.

Granted that, for a successful invasion of these islands, everything depends upon "fog" of one sort or another. In 1805, when the Grand Army of Napoleon was massed on the French Channel coasts, vehement and unceasing prayers were offered up in the churches of England against a fog. What are the chances that a "fog" will come to the assistance of the invader in the twentieth century?

The conditions making for our security against a surprise attack—which is the most important "fog" we have to contend against—are thus summarised by Mr. Fred T. Jane:—

"The landing of the invaders on English shores would have to be the first sign that a state of war existed, or could possibly exist. That is to say—

"1. Nearly 100,000 men would have to be massed on the German coast without exciting suspicion.

"2. The necessary vessels to carry them and their sup-

plies—something like two hundred ships at least—would also have to be collected without exciting any suspicion.

"3. The British Fleet would have to be disqualified from arriving on the scene too immediately after the disembarkation.

"4. The invading army would have to march on London (or the naval bases) carrying all before it."[1]

Now, in face of the unquestioned superiority of the British Fleet, it must be admitted, first, that invasion is the only means by which Germany could hope to bring us to submission; and that, therefore, a matured scheme for that invasion must necessarily be the sole care of the German General Staff when they are considering a war with us. To suggest, as has been done, that no such scheme exists in the office of the General Staff is ridiculous, for such an institution has no other *raison d'être* than to prepare plans for the conduct of any and every war which it may be called upon to prosecute, and Germany is not likely to ignore the scheme which offers her the greatest and, indeed, the only chance of success in the event of a war with us.

It is, in the second place, equally certain that no invasion has any chance of success which does not come more or less as a "bolt from the blue." To give even a few days' notice of such an intention would be to have the whole scheme nipped in the bud, for the concentration of the British Fleet in the threatened neighbourhood would render all oversea operations impossible. At the same time it is going too far to say that a landing would have to be the first sign that "a state of war could possibly exist." That the bolt should come from an absolutely clear sky is inconceivable; but England, in recent years

[1] *Heresies of Sea-Power.*

as well as in old days, has displayed such a lax attitude on the approach of international difficulties, and the inherent disinclination of Englishmen to believe that any nation could dare to take up arms against them is so firmly rooted; while, on the other hand, determined peoples with definite objects in view have so frequently either totally disregarded the supposed conventionalities of war or seized upon the slightest pretext for putting their prematured ideas into execution, that the cloud in the "blue," no bigger than a man's hand, would probably go unnoticed by the people of this country until the advance of a hostile army broke the storm over their heads in all its irresistible fury.

In this connection, that excellent work of Lieut.-Colonel (now General) Maurice, *Hostilities without Declaration of War*, has attained to an almost classical distinction. It is pointed out by General Maurice that in the hundred and seventy-one years from 1700 to 1870, inclusive, less than ten instances have occurred where a "declaration of war" has been issued prior to the opening of hostilities. In forty-one of the cases where no declaration was made, "the manifest motive (in several instances the actually avowed motive) has been to secure advantages by the suddenness of the movement and the consequent surprise of an unprepared enemy. . . . Other cases are especially interesting to Englishmen, because they show how fierce wars may break out at some distant point of our great colonial empire without the mother countries, whose forces are engaged, being even aware, until long afterwards, that fighting has taken place: how the home Power which first receives the news may consider itself justified in almost any act of sudden aggression, and may, in consequence of the prior colonial hostilities, contrive to appear before

Europe in the light of the aggrieved Power rather than of the aggressor, no matter how violent its action in Europe may be."

After pointing out that the proportion of hostilities commencing without declaration of war has increased in late years, General Maurice proceeds :—

"The change that has come over the dealings of nations with one another in these respects has clearly not been due to any increased treachery of disposition in modern times, but simply to the development of mechanical improvements and the increased facilities of intercommunication. When armies moved by the slow stages by which the Roman legions advanced, the whole progress of war was cumbrous, and a solemn announcement of coming war was part of the laboured programme. But in modern times, the development of roads, telegraphs, railways and other means of communication, of supplies, food, clothing and general wealth, the facility with which physical obstacles can now be overcome, the perfect knowledge of ground furnished by good maps, have made sudden enterprises incomparably more easy than they were in earlier times, very much more easy in the nineteenth century than in the eighteenth, and hence these surprises have in the latest century followed one another with greater rapidity than ever before."

These considerations apply with at least equal force to sea communications, and are especially applicable to the opening of a struggle between Great Britain and Germany. Germany is virile, England is lethargic; Germany is aggressive, England is peaceful; Germany is ambitious, England is complacent. The temperament of the two peoples promises nothing with more certainty than that when Germany believes her opportunity to have come she

will have no difficulty in taking England unawares. Not only does our national frame of mind offer a great temptation to an eager and expansive people, but it is Germany's only chance.

As to her actual ability to make the necessary preparations without exciting suspicion in England, it has already been shown[1] that Germany firmly believes this to be possible. It has been computed that 200,000 men could be concentrated at the German North Sea ports within thirty-six hours, and this is probably anything from twice to four times the number that would be required to be added to the garrisons of the coast ports for the purposes of the expedition. There would need to be no antecedent concentration of shipping, for there is always more than sufficient in the German ports for the conveyance of such an army across the North Sea, and there is good ground for the statement that every ship of importance as she reaches one of these ports has assigned to her, on paper, the military force she may, at any moment, be called upon to transport to the English coast. As for facilities for embarkation, in the North Sea alone there is sufficient wharfage accommodation for more than a hundred 600-foot ships to lie alongside simultaneously. The disembarkation of 75,000 men could probably be carried out within ten hours. The evolution is not nearly so uncommon in German manœuvres as in British. Nothing is lacking for launching the "bolt from the blue," whether in material, organisation or training.

There will be no necessity for an invading army, presuming it to have landed safely on our coasts, to "march on London or the naval bases." Its primary objective will be the manufacturing centres in the north of England,

[1] Chapter VI.

where the appearance of a hostile army would do far more to dislocate the internal organisation of the country than any operations in the south could do. The throbbing heart of England is in the north, and at the heart the blow will be aimed. Why should an invader make an objective of our naval bases? Could our Navy save us after an army had been landed any more than our own Army could save us from starvation if the Navy were defeated? The Channel Fleet might annihilate the Aktive Schlachtflotte, but it could not set a single Lancashire cotton mill to work if a German army occupied Manchester.

Lord Overstone in 1860 gave us a picture of what might be expected in such circumstances:—

"The complicated and very delicate network of credit which overlies all the multitudinous transactions of the country would vibrate throughout upon the first touch of our soil by a foreign invader, and would, in all probability, be subject to a sudden and fearful collapse; while the confusion and distress produced among the labouring classes would be truly fearful. Millions of our labouring population depend for their daily maintenance upon the trading and manufacturing enterprise, the vital principle of which is the undisturbed state of public order, confidence, and credit."

It cannot be necessary to enlarge upon these considerations; they would follow as the immediate consequences of the *landing* of an invading army, without reference to ulterior operations; and the serious import of them cannot be overstated.

When it is remembered that Great Britain with a naval strength that assures to her to-day, and for at least twenty years to come, the unchallengeable command of the sea, is by that strength left vulnerable only by a direct stroke at

the heart; when the perfection of Germany's plans for the invasion of England has been realised; and when, further, it is considered that even an unsuccessful attempt at invasion would entail the loss of but a fraction of her military strength, the necessity for taking every practical step to render that operation impossible becomes apparent. It is not enough to point to Napoleon's real or feigned effort and to say that invasion is impossible; for one can point to Asclepiodatus to prove that it is not. Indeed, argument on either side is of no account. The outstanding fact is that Germany believes that it is possible, and that she realises that for very many years yet she can never be a match for England unless she can put a scheme for our invasion into execution. Even then, she can only hope to succeed by the exercise of such secrecy as shall leave us in ignorance of her intentions until the moment when her transports belch forth their armed freights upon some unprotected stretch of our shores; and it is this that gives us our protection. Against the secret preparation of an invading army in the German North Sea ports and its embarkation and sailing, we have no guarantee; but so long as the British Navy bears to the German something like its present ratio of superiority, so long shall we be able to safeguard our interests abroad, and at the same time maintain in home waters a naval force which will suffice in all truth to make the serious invasion of these islands "a possibility which we need not consider." Nor is it enough that the naval force to which this duty is assigned should be in home waters. Any fleet west of the Straits of Dover would, in the event of a sudden outbreak of hostilities, run the risk of losing no small proportion of its strength through mines and torpedo and submarine attack, as well as in action with the German battle fleet,

as it came up from the west into the North Sea, and there is little doubt that, with the advantage of the initiative and of position which Germany would hold, her fleets would be able to hold the British forces in check for a period sufficiently long to enable the invading army to land without molestation. With that accomplished, the German fleet could turn tail and run. The issue would be out of the hands of naval forces and would be decided on the plains of Lincoln or York.

The whole situation demands that there should be a British fleet in the North Sea capable of demolishing the naval force which Germany maintains in those waters. It should never leave the North Sea except for an occasional cruise north about, and should never on any account enter the English Channel. It should never enter any narrow-necked harbour such as Sheerness or Cromarty without leaving outside a guard of cruisers and torpedo craft to protect it from sudden and unexpected attack. In short, it should be maintained in a state of perpetual readiness; for in no other way can the threat of a "bolt from the blue" be effectually guarded against. To make assurance doubly sure, more torpedo-boat stations should be created on the east coast. We have three already, at Dover, Sheerness and Harwich, but some are needed further north. The Humber and the Firth of Forth offer themselves as appropriate stations, and the result of an inquiry recently conducted by the Admiralty will probably be to develop these places, as well as others, in the direction indicated. With a fleet of sixteen battleships in the North Sea, not to mention the attendant squadrons of armoured cruisers, scouts and torpedo-craft, the coasts of England would be inviolable. With such a force as we have at present, inferior both in *matériel*

and in general efficiency to the German Active Battle Fleet, we shall continue to run the risk of having the North Sea laid open to our enemies by the sudden attack of determined torpedo-boats and the mining of the entrance of the harbour in which the fleet lies. It is dangerous to sneer at the suggestion. General Maurice shows us that similar things have been done forty-one times in 171 years on land, and there is not the slightest reason why it should not be done at sea. More than that, it was with such a "bolt from the blue" that Japan laid the foundation of her success in her war with Russia. Apart from the loss of *matériel*, the effect which such an attack produces upon *personnel* is incalculable.

XI

BRITISH SHIPBUILDING POLICY

ACCORDING to the Navy Act of 1900, the German Fleet was to consist by 1920 of the following ships:—

	Battle-ships.	Armoured Cruisers.	Protected Cruisers.	De-stroyers.
Two double squadrons for home service	34	8	28	80
In reserve at home	4	3	—	16
For Foreign Service	—	3	10	—
Total	38	14	38	96

By the age limits then in force, none of the battleships would be more than twenty-five years old, of the cruisers more than twenty years, and of the destroyers more than twelve years.

These figures do not represent the then wishes of the naval authorities. When the Bill was before the Reichstag the necessity for a powerful fleet for home waters was fully and almost unanimously recognised, but Admiral von Tirpitz failed to impress upon the members the need for a strong force on foreign stations, with the result that the demand for six armoured and seven protected cruisers destined for those stations was refused. After a lapse of six years, however, although the objection to foreign squadrons remained as strong as ever, the feeling of the country became favourably disposed towards a further expansion of the home forces. In 1906 the Navy Act Amendment Act was introduced and passed, which not only greatly

increased the size of the units to be laid down in future years, but also provided for the construction of the six armoured cruisers rejected in 1900, and for seven divisions of destroyers (forty-two vessels in all) in place of the seven protected cruisers also then rejected. The cruisers will be be built in 1906–11, and one division of destroyers will be laid down every year from 1906 to 1912 inclusive. The latter craft, when the effective number reaches 144, will be maintained at that strength, twelve substitute boats being laid down every year.

From this it will be seen that the strength of the German Navy in 1920 will be as follows :—

Battleships	38
Armoured Cruisers . . .	20
Protected Cruisers . . .	38
Destroyers	144

A further great addition to the efficiency of the navy will be the result of the Amendment Act of 1907. The principal objects of this are, the construction of a flotilla of submarines, and the reduction of the age limit for battleships to twenty years. No actual increase in the numerical strength of the fleet in armoured ships is provided for; but the effect of the new law will be to give Germany by 1920 a far more powerful fleet than she would have had under the old arrangements. Instead of the battle fleet consisting of eighteen vessels of the "Dreadnought era" and twenty of earlier design, the numbers will be twenty-three and fifteen respectively. In 1920, therefore, the German Navy will comprise the following battleships :—

5 of the Wittelsbach class (1900–02),
5 of the Braunschweig class (1902–04),
5 of the Deutschland class (1904–06),

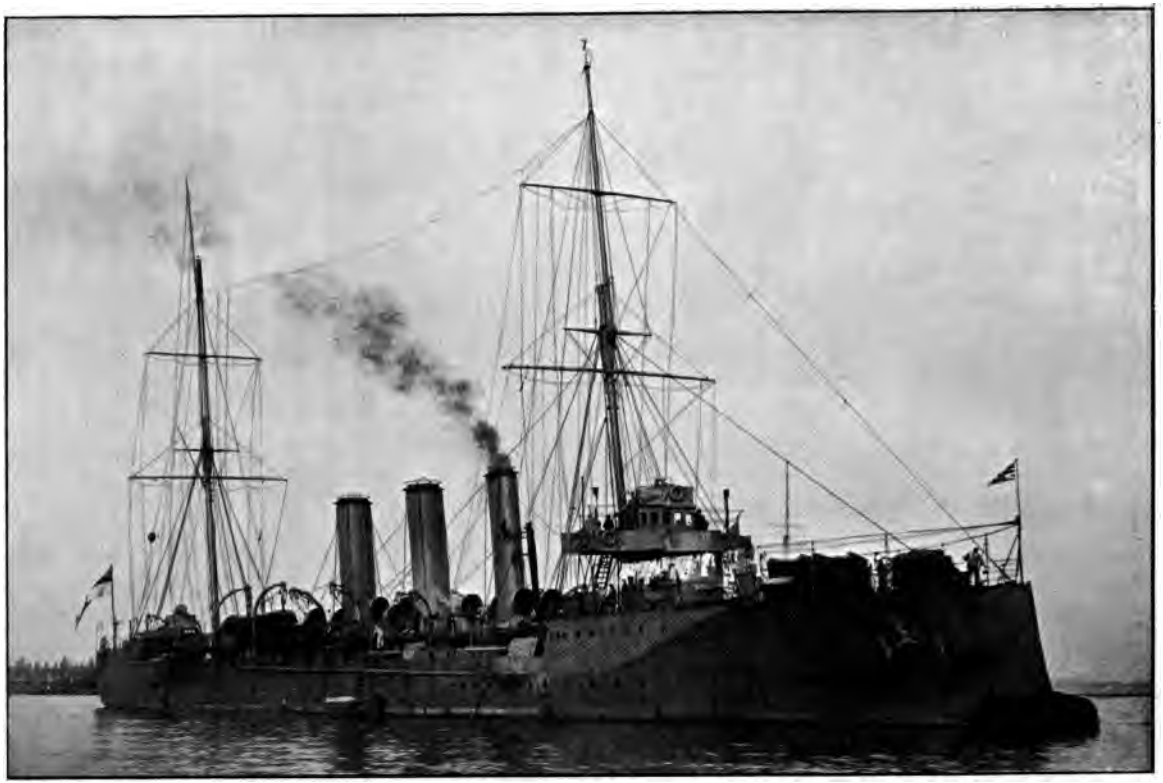


Photo. West & Son, Southsea

H.M.S. AMETHYST. Protected Cruiser
Displacement: 3000 tons. Armament: Twelve 4-in.
Sister ships: *Diamond, Sapphire, Topaze*

leaving twenty-three vessels to be completed between the present year and the expiration in 1920 of the Act of 1900. Since the last of the ships of this Act is to be laid down in 1917, while four of the "Dreadnought era" have already been commenced, it follows that in each of the next ten years (1908–17) an average provision must be made for two battleships, except in one year, when one only will be commenced. Only one German armoured cruiser will reach the age limit by 1917, so that, as there are ten of these ships built (8) or building (2), an average of one per year with one additional must be laid down from 1908 to 1917 in order to reach the desired total by 1920.

Now it is an incontestable fact that the British battleships of the Majestic type, laid down in 1894–5, together with all those built between those years and 1900, are superior as fighting units to the German vessels of the Wittelsbach class laid down in 1900–02. There are authorities which class even the *Trafalgar* (1887) and the eight Royal Sovereigns (1890–2) as their equals. Mr. Fred T. Jane, in the 1907 edition of *Fighting Ships*, and the British Navy League, accord the following points, which are supposed to represent their proportionate fighting value, to the classes mentioned:—

	Majestic. 1894.	*London.* 1898.	*Canopus.* 1897.	*Royal Sovereign.* 1890.	*Trafalgar.* 1887.	*Wittelsbach.* 1900.
Fighting Ships	50	60	50	40	40	40
Navy League	7	10	7	5	?	7

It would, therefore, be ridiculous to suggest, in face of these figures, that because Germany chooses to adopt an age limit of twenty years for her battleships, Great Britain should do the same. No one, of course, can tell what developments in naval architecture may be made

between the present year and 1920; but if they are such as to justify the retention of the German Wittelsbachs, they will certainly justify the retention of every British ship that is equal or superior to that class. Mr. Jane has probably erred in giving the *Royal Sovereign* and *Trafalgar* an equality with the German ship, for the overwhelming quick-firing armament and the superior speed of the latter would give her a great advantage in action. At the same time, the Navy League is at fault in giving the Majestics a bare equality. The comparison would be fairer if they gave the German ship six points.

We may, therefore, in attempting to forecast the probable position in 1920, rule out only such British battleships as were built before the *Majestic*, which will, reckoning only ships already built, laid down, or provided for, give us the following battleship strength by the time the German Navy Act of 1900 is completed:—

Class.	Ships.	Points according to *Fighting Ships.* Each.	Total.
Majestic	9	50	450
Canopus	6	50	300
Formidable	8	60	480
Duncan	5	60	300
Triumph	2	60	120
King Edward	8	80	640
Lord Nelson	2	100	200
Dreadnought	8	100	800
Total	48	—	3290

Giving the new German ships an average of 110 points each, to allow for improvements in design between the present year and 1917, when the last of the Navy Act battleships will be laid down, the German Navy will have the following strength in 1920:—

Class.	Ships.	Points according to *Fighting Ships.* Each.	Total.
Wittelsbach . .	5 ...	40 ...	200
Braunschweig . .	5 ...	60 ...	300
Deutschland . .	5 ...	60 ...	300
New . . .	23 ...	110 ...	2530
Total . .	38 ...	— ...	3330

These figures show that even if British new construction were to cease altogether for thirteen years we should still, at the end of the period, have practically an equality in battleship strength with the German Navy. But the comparison is further very intimately affected by the armoured cruiser. Of this class we have six vessels, the Cressy type, which were laid down in the closing years of last century, and which would, therefore, fall in the category of ships to be removed from the list under the German system. But the Cressys are admitted to be the equals of the Wittelsbachs, and, applying the same argument as we have done above to battleships, the one should not go before the other. The Cressy class may safely be retained as long as Germany retains her 1900–02 battleships.

Assuming again that British construction ceases when present programmes have been completed, our strength in these ships when the Navy Act of 1900 is completed will be as follows :—

Class.	Ships.	Points according to *Fighting Ships.* Per unit.	Total.
Cressy . . .	6 ...	40 ...	240
Drake . . .	4 ...	40 ...	160
County . . .	10 ...	25 ...	250
Devonshire . .	6 ...	35 ...	210
Black Prince . .	2 ...	60 ...	120
Warrior . . .	4 ...	60 ...	240
Defence . .	3 ...	60 ...	180
Invincible . .	4 ...	80 ...	320
Total . .	39 ...	...	1720

Allowing the new German ships a 10 per cent greater fighting value than the latest armoured cruisers, her strength in 1920 in this class of ship will be as follows:—

	Ships.	Points according to *Fighting Ships.* Per unit.	Total.
Prinz Adalbert class	2	25	50
Roon class	2	25	50
Fürst Bismarck	1	40	40
Scharnhorst class	2	50	100
"E"	1	80	80
"F"	1	80	80
New (1908–17)	11	88	968
Total	20		1368

The aggregate strength of the two navies in armoured ships would, therefore, be as follows:—

	Great Britain.		Germany.	
	Number.	Points.	Number.	Points.
Battleships	48	3290	38	3330
Armoured cruisers	39	1720	20	1368
Total	87	5010	58	4698

The British Fleet would still be some 50 per cent stronger than the German in the number of its armoured ships, and 7 per cent in calculated fighting power.

Such a speculation as this will no doubt be stigmatised as "unprofitable." To a certain extent, perhaps, it is, for it is absurd to suggest that Great Britain could possibly call a halt in the construction of armoured ships for a period of thirteen years; but it does show in a very striking manner how greatly the "German menace" has been exaggerated in some quarters. So assiduously has this been done that it is safe to say that by far the great majority of the people of this country firmly believe that the German Navy occupies the second place amongst the

fleets of the world, and is rapidly overtaking us; yet the truth is that the navies of the United States and France are both stronger numerically than the German, although on the reckoning of efficiency France would be displaced.

Great Britain's supremacy at sea must be upheld, certainly in safety, and, if possible, in so decided a manner that no Power shall ever deem it wise to attack it. It goes without saying that such a position as has been outlined in the foregoing tables is one in which we must never find ourselves, for a mere 7 per cent superiority over one Power would bring immediate war and, very probably, disaster; but the question which has so often been asked and answered again arises, What standard of strength should we maintain in order that our supremacy may be, as far as reasonable men can see, unchallengeable?

For many years the "two Power standard" has been accepted by all national schools of thought in Great Britain—by which phrase it is intended to exclude the "internationals" or socialists—as the lowest compatible with the security of our maritime supremacy. How such a standard came to be so widely accepted is well known, but there is no logical reason for its continued existence. It was perfectly comprehensible twenty years ago, when the Dual Alliance was a living thing, and when rumours of war with France and Russia in combination were as frequent as are frothy attacks on the House of Lords to-day. The navies of France and Russia were then the most formidable in the world after our own, but under the conditions existing to-day Great Britain could probably account for the fleets of those two Powers with one-half of her present strength. At the present moment, the two fleets next in strength to our own are those of the United States and France; but not only is a combination between those nations

against us one of the remotest possibilities of international politics, but the French Navy is all but negligible as a fighting force owing to the inefficiency and indiscipline of its *personnel*. Further, it may be considered, without giving undue scope to sentiment, that a war between Great Britain and the United States is a chimera that can never be materialised. The Russian Navy can have no influence in practical politics for a couple of decades yet.

The combination that would cause the greatest trouble to us is one which has never yet been discussed, although the possibility of its being made is at least equal to any other that can be mentioned. There is a treaty of alliance between Great Britain and Japan which expires in 1912. It is a treaty behind which there is, on our side at least, and in spite of a generally rhapsodical press, absolutely no force of popular opinion, while in Japan it is regarded as nothing more serious than a happy circumstance which probably saved her from an ugly mess four years ago. The Japanese Navy comprises thirty-five armoured ships, all good material, so far at any rate as those vessels that were not captured from Russia are concerned, manned by an excellent *personnel*. We have four armoured ships in Far Eastern waters which could be disposed of without any trouble. The distance from Portsmouth to the Yellow Sea is more than 12,000 miles, and we should have to send at least fifty armoured ships to make sure of meeting the Japanese in superior strength. If such a necessity arose to-morrow, or five years hence, the local supremacy of the British Seas would be absolutely in the hands of Germany, for we could not afford to dispatch any but our best ships to act in such distant waters. It is a possibility upon which it is not pleasant to dwell. It presents far more serious dangers to England than a Franco-German or Russo-German

alliance. The fleets of the co-operating nations would not be subject to those internal dissensions which have always marred the power of allied naval forces, since they would be acting in waters separated by 12,000 miles of ocean; and even if British statesmen learned at the beginning of the trouble, or at any time before, that an understanding existed between the Eastern and the Western Power, Japan could do irreparable damage in the East before the British Fleet had sufficiently accounted for the German Navy to be able to dispatch the necessary force to the China Seas.

The alternative to the "two Power standard" is far more reasonable. It consists in the possession of twice the number of armoured ships which can be mustered by the strongest of possible enemies; and it has received at least equally authoritative support. In days when France was our most dangerous rival afloat, Lord Charles Beresford expressed his belief that our strength in battleships should be twice that of France. Lord Goschen declared in 1899 that Great Britain "would, if necessary, lay down two vessels, or even three, for every one laid down in Germany"; and the principle, at all events, was subscribed to by Richard Cobden, when, in 1861, at a time when France alone besides ourselves possessed a considerable naval force, he made the following statement:—

"I would vote a hundred million pounds rather than allow the French Navy to be increased to a level with ours, because I should say that any attempt of that sort, without any legitimate grounds, would argue some sinister design upon this country."

The adoption of "twice the strength of Germany" as the standard of our naval establishment would not meet with the approval of every one; but it would be accepted

by all reasonable men who, realising that the husbanding of finances is no mean factor of national strength, are content to base their demands on probabilities rather than upon more or less remote possibilities.

Following out the principle, the following considerations have to be noted. We know that, according to present arrangements, the German Navy will consist by 1920 (the last ship of the existing programme being laid down in 1917) of thirty-eight battleships and twenty armoured cruisers, none of which will be more than twenty years old. To maintain the standard suggested, the British Navy should, at the same time, comprise 116 armoured ships, it being unnecessary yet to discriminate between battleships and armoured cruisers, since all future vessels of this type will be able to lie in the line against any battleship built before the Dreadnought era. It has already been shown that in 1920 forty-eight of our present battleships and all our armoured cruisers (thirty-nine) will be effective, so that the number of ships requiring to be laid down in the period 1909–17, or rather, 1909–18, since our armoured ships are in future all to be completed in two years, is 116 less 48 + 39, or twenty-nine ships, an average of just under three per year.

If this proposal were followed out, however, we should not be in quite such a satisfactory position as the mere numbers would appear to indicate, for we should still be short of the desired proportion in ships of the latest design. It is customary now to reckon the *Dreadnought* as the starting-point from which the modern battleship takes its standard. In the following table the *Lord Nelson* and *Agamemnon* have been included in the "Dreadnought era," since they are at least equal to the former ship in fighting power. This, then, would be the composition

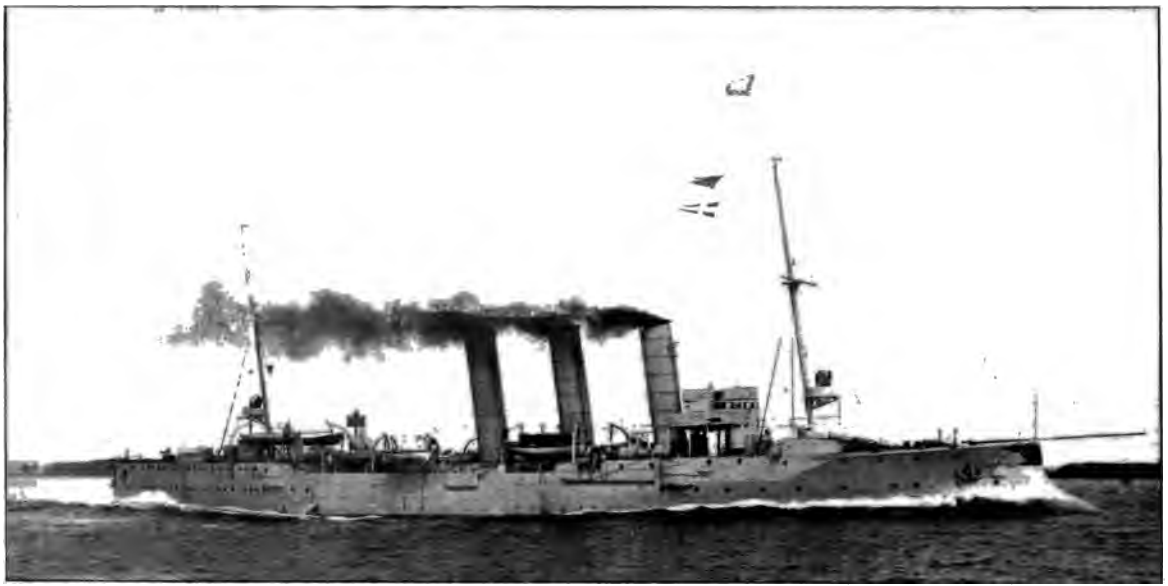


Photo. Renard, Kiel

S.M.S. LÜBECK. PROTECTED CRUISER
Displacement: 3250 tons. Armament: Ten 4·1-in.
Sister ships: *Berlin, Bremen, Danzig, Hamburg, Leipzig, München*

of the two navies in 1920, assuming that the twenty-nine new British vessels were so proportioned as to give us a two to one superiority in each of the two classes of armoured ships:—

BATTLESHIPS.

	Great Britain.		Germany.
Pre-Dreadnought era . . .	38	...	15
Dreadnought era . . .	38	...	23
	—76	...	—38

ARMOURED CRUISERS.

Pre-Dreadnought era . . .	35	...	8
Dreadnought era . . .	5	...	12
	—40	...	—20
	116		58

It will at once be seen from these figures that our superiority would be chiefly made up of ships designed prior to the "Dreadnought era"; that while we should have, of ships built before 1905, 73 to Germany's 23, the figures for the subsequent period would be 43 and 35 respectively. Add to this the fact that the ten armoured cruisers of the County class are armed only with 6-in. guns and have but four inches of water-line armour, and the necessity for building to reach something more than a two to one standard in 1920 will be evident. Another fact that has an important bearing on the question is, that when Germany discards the five ships of the Wittelsbach class it will be time for us to remove at least the nine Majestics and the six Albions from the effective list; and as this will, in the natural course of things, be done very shortly after 1920, it would, if we were to build for a bare two to one superiority in that year, leave us with the necessity of building, for a short period at least, three ships to Germany's one.

In order to avoid this necessity for a sudden burst—a policy which, for efficiency, cannot be compared to one of continuous and steady shipbuilding such as Germany laid down for herself in 1900—it would be far wiser on all points to lay down from 1908 to 1918 inclusive, four armoured ships every year—forty-four in all. This cannot be termed an extravagant proposal, and besides giving us ample strength to meet any probable combination, it ensures the most economical construction obtainable. It would be far more inconvenient and expensive to have to frame a "panic" programme of eight or nine battleships in, say 1914, than to spread the same number of ships beforehand over a period of years.

But perhaps the greatest recommendation of the course suggested is that the policy outlined in the official "Statement of Admiralty Policy," issued in November, 1905, leads straight up to it. In that document occurred the following paragraphs:—

"At the present time strategic requirements necessitate an output of four large armoured ships annually, and unless unforeseen contingencies arise, this number will not be exceeded. . . .

"The Board have come to the conclusion that the right policy is to make out their programme of shipbuilding for next year only, and while they anticipate at present that the output of four large armoured ships a year should suffice to meet our requirements, there would be no difficulty whatever in increasing this output to whatever extent may be necessary in consequence of any increase of Naval Power abroad."

It will be noticed that these paragraphs are mutually contradictory, the first laying down our requirements for an indefinite number of years—"four large armoured ships

annually"—and the second declaring that it would be unwise to look farther ahead than the following year. It is not perhaps surprising, therefore, that the Admiralty did not see fit to adhere even for one year to the policy adumbrated. In the financial year 1905–6, we had commenced "four large armoured ships" (*Dreadnought*, battleship; *Invincible*, *Inflexible*, and *Indomitable*, armoured cruisers); but in the following year, the first after the publication of the memorandum, although four ships were originally provided for, only three were laid down (*Bellerophon*, *Téméraire*, and *Superb*, battleships), and the same number in 1907–8 (*St. Vincent*, *Collingwood*, and *Vanguard*). In 1908–9 only two armoured vessels are to be commenced. No logical reason for these reductions has ever been adduced. The British naval authorities must have been aware of the condition of the Russian Navy before the Russo-Japanese war, so that its existence or extinction could not have had any appreciable influence on our shipbuilding programmes—certainly not the twenty-five per cent effect which something or another has produced in the past two years. The Japanese alliance may have had something to do with it, but if so it is unwarrantable. Neither France nor Spain reduced her expenditure upon shipbuilding during the Napoleonic wars, while during the seventeenth-century struggles with the Dutch the many alliances had quite the opposite effect upon the programmes of the contracting parties. The last excuse put forward is that German shipbuilding was "paralysed" by the appearance of the *Dreadnought*. This is perfectly true: but Germany has laid down for herself a definite standard to be attained in 1920, and although she may have been staggered for eighteen months by the production of a unit which has exercised so revolutionary an

add to her flotillas under the Navy Act of 1900 and the Amendment Act of 1906:—

	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908		Total.
England ...	0	5	10	9	15	0	5	3	5	16	...	68
Germany ...	12	6	6	6	6	6	6	12	12	12	...	84

	1909	1910	1911	1912	1913	1914	1915	1916	1917
Germany ...	12	12	12	12	12	12	12	12	12

Here again we see the admirable continuity of German constructive policy; but equally significant is the fact that if present tendencies are allowed to continue for a very few more years, Germany will be far ahead of us in modern vessels of this type. There is every reason for saying that the opinion of the Navy is absolutely opposed to the negligence with which this branch of the Service has been treated in recent years—the outcome, no doubt, of the phenomenal, even abnormal, interest now taken in gunnery. At present we can muster a paper total of 171 destroyers, built and building, but of these no fewer than forty-five are of the twenty-seven knot type, which is universally regarded, even in official circles, as obsolete, since none is maintained in full commission, or at all for any but instructional purposes. It is generally assumed that a destroyer is worn out in ten years, and certainly the pace at which the fully commissioned British flotillas are now worked is sufficient to wear them out in half the time; but the only Power which places a definite limit to the "life" of her craft of this type is Germany, and she replaces hers automatically after twelve years. All the British twenty-seven-knotters were built between 1893 and 1895, and are therefore between thirteen and fifteen years old. Under that age, built and building, we have 126 vessels to Germany's seventy-four, and even the official farce of keeping the earliest and worn-out ships on

the Navy List to lull the British public into a false sense of security cannot be kept up very much longer, and when they have to be removed—as they certainly will—at one swoop, there will inevitably be a "panic" when the country comes to realise the results of the haphazard policy which for the last four years has been pursued with regard to these vessels. In 1893–6 we laid down seventy destroyers, in 1904–07 only thirteen. In the latter period Germany laid down thirty-six.

The bare figures of the flotillas in 1908 give, therefore, a very erroneous idea of their relative strength, and in destroyers, more perhaps than any other craft, no individual superiority can atone for lack of numbers. By 1917, as will be seen from the above table, Germany will possess 144 torpedo-boat destroyers, none of which will date from before 1906. In that year, the last of the British River class, which was commenced in 1903, was completed, and probably all of these vessels, thirty-four in number, will be capable of effective service in 1917, since they are more strongly built than any of their contemporaries or predecessors. On this assumption, Great Britain will in 1917 have available the following vessels at present on the list:—

River class	34
Tribe class (Afridi, etc.) . .	28
Swift (36 knots) . . .	1
	63

At the same time, Germany will have 144, so, that in order to maintain a bare equality, we should lay down eighty-one in the nine years 1909–17. A bare equality, however, is not sufficient. What should our superiority be? The author has put this question to fifteen naval officers (less than a half of whom were torpedo specialists whose estimates might, perhaps, be received with a certain

amount of scepticism and demands for a liberal discount), with the following result:—

Two favoured a superiority of		2	: 1
Four	„ „	5	: 3
Seven	„ „	3	: 2
Two	„ „	4	: 3

The balance of opinion was, therefore, in favour of a British superiority of a little more than 3 : 2. It is proposed here to amalgamate the two mean views, and assume that 19 : 12 is the desirable proportion. When Germany in 1920 has 144 destroyers, Great Britain should have $\frac{144 \times 19}{12}$, which equals 228. Sixty-three of our existing boats will, however, still be in service, so that the annual programmes for the period, reckoning that boats laid down in 1918 will be completed by 1920, should be $\frac{228 - 63}{10}$, which represents nearly seventeen per year. The number sounds high; but it does not bear so large a proportion to German proposals as the battleship programme suggested, either in this chapter or by Lord Goschen in 1899, "two, or even three, to one."

Coast Service Battleships.—Vessels of this class have not been built for the British Navy for more than twenty-five years, and, indeed, under the conditions which existed right up to the end of the nineteenth century, there was little room for them in the naval economy of the Empire. But those conditions have been completely revolutionised. Instead of our danger being a world-wide one as it was twenty or thirty years ago, it is now concentrated at the heart, and things which would not have been at all justifiable under the old order of things become more or less essential under the new.

Vice-Admiral P. H. Colomb in 1878 wrote that "The building of powerful ships which are not fully sea-going



Photo. Renard, Kiel



Photo. Symonds & Co.

(1) S.M. TORPEDO-BOAT DESTROYER S 125. **Speed**: 29·5 knots
(2) H.M. TORPEDO-BOAT DESTROYER *TARTAR*. **Speed (maximum)**: 37·037 knots
(Both fitted with Parsons' Turbines)

can only be justified on the assumption that the chief danger lies at the heart of the Empire, and not on our lines of communication." To-day this assumption accords fully with the actual conditions, and the naval advisers of the Government might well consider whether the time has not come for the building of ships specially designed to meet them. The coast service battleship, being of comparatively small displacement and light draught, would be able to act in waters where leviathan battleships and armoured cruisers would be unable to penetrate. They would be able to get within range of the German naval bases, which Dreadnoughts in all probability could not, and ships which can do that are likely to be in considerable demand when the German ships, after the first few days of war, have been driven back to their harbours by our fleets. They would, too, have a very appreciable defensive value, being able to fulfil all the duties of shore batteries with the added advantage of mobility. Armed with a few heavy guns and a large number of quick-firing weapons, such ships would be able either to patrol our coasts and defend them against invasion or raid, or they would be able to lie off our naval harbours as a support to the torpedo craft on guard. Both speed and coal capacity could be reduced to a very low figure, and the weight put into armour, which should be thick enough to withstand the heaviest naval ordnance at medium ranges. They could also be made practically impervious to torpedo-attack. Their duties would lie in the near neighbourhood of coasts, and their complements, apart from the mechanical and navigating staffs, could be composed entirely of men of the Royal Garrison Artillery, the position of which corps, under existing conditions, is rather anomalous and very much like a sinecure.

XII

THE NAVIES OF THE WORLD

THE UNITED STATES

LIKE that of Germany, the modern navy of the United States had its beginnings in the eighties of last century. In spite of the unequivocal lessons of the Civil War, the fleet had been allowed to decay, and for twenty years after that struggle scarcely a ship was built, successive governments shielding themselves behind the plausible excuse that the best policy was to wait until European Powers had finished experimenting in warship design, and then to step in and take advantage of their experience without having to bear any of the great attendant cost. When at last steps were taken for the creation of a fleet the folly and short-sightedness of this policy were exposed. In 1883, during the Naval Secretaryship of William H. Hunt, a commission of naval officers was appointed with Rear-Admiral John Rogers as president, to "determine the requirements of a new navy"; and they reported to the effect that the United States, for the adequate protection of her interests, required a fleet of 21 battleships, 70 protected cruisers, 20 torpedo-boats, 5 torpedo gunboats and 5 rams. It was now that the folly of the "waiting" policy showed itself. The Government wished to adopt, at least in part, the recommendations of the commissioners, but when they looked about for means

to carry out their wishes, they found that there was none. In the first place, there was no national yard capable of building an armoured ship, or even a protected one; then there was no armour-plate manufactory in the country, and, lastly, there was no means for the construction of modern artillery. The ambitious proposals of the commission were therefore reduced to four cruisers, and orders for the *Chicago*, *Boston*, *Atalanta* and *Dolphin* were placed with the Roach Company of Chester, Pennsylvania, the deficiencies of the American yard being supplied from Europe. From this time the naval policy of the United States entered upon a more or less steady advance. The first battleship to be laid down was the ill-fated *Maine*, whose destruction was no small factor in bringing about the war with Spain in 1898, and she was followed by the *Indiana*, *Oregon* and *Iowa*, all of which compared very favourably with contemporary vessels of the British Navy. The fine armoured cruisers *Brooklyn* (1891) and *New York* (1895) were built years before the British Government began to consider the necessity for such vessels; and when the war with Spain came to test the efficiency of the new fleet it gave such a good account of itself that only a few Spanish gunboats were added to the United States Navy List. The rest—and there were some fairly good cruisers amongst them—were driven ashore and destroyed at Cavite and Santiago.

Since the conclusion of the war the maritime advance of the United States has been very rapid. The annual estimates have shown a continuous upward tendency, and, reckoning on this basis, in only four years since 1889 has she not been one of the "two next strongest Powers" to ourselves. In 1889 the estimates were £5,300,000 compared with Great Britain's £14,300,000;

whereas for 1907–8 the respective figures were £23,719,600 and £30,442,409, a difference of less than 30 per cent. Since the passing of the British Naval Defence Act, the following sums have been applied to the maintenance and increase of the United States Navy.

Year.	Total Estimates.	New Construction.
1889	£5,353,535	£1,943,400
1890	4,453,051	1,795,000
1891	6,505,229	2,621,400
1892	4,708,653	1,892,000
1893	4,362,292	1,465,000
1894	5,073,365	2,022,345
1895	566,8,802	2,665,504
1896	6,112,532	2,305,811
1897	7,009,202	1,320,211
1898	23,328,777[1]	4,276,435
1899	10,110,953	2,135,497
1900	13,385,572	4,344,128
1901	16,012,438	5,219,357
1902	16,203,913	4,701,126
1903	16,824,070	5,327,367
1904	19,564,632	6,539,989
1905	22,584,612	10,141,957
1906	20,891,325	6,776,086
1907	23,719,600	4,564,659

That there is likely to be a further considerable increase in the amount devoted to the navy is evident from the passages in the President's message to Congress of December last which refer to the fleet.

"In my judgment," said President Roosevelt, "we should provide this year for four battleships. But it is idle to build battleships unless in addition to providing the men, and the means for thorough training, we provide the

[1] Including extraordinary war expenditure.

auxiliaries for them, the docks, the coaling stations, the colliers and supply ships that they need. We are extremely deficient in coaling stations and docks on the Pacific, and this deficiency should no longer be permitted to exist."

It is clear, too, that the President is under no misapprehension as to the relative value of offence and defence as a policy to pursue at sea, or as to the classes of ships essential to carrying out that which he, tutored, doubtless, by Captain Mahan, considers the better one.

"The only efficient use for the Navy is offence. The only way in which it can efficiently protect our own coast against the possible action of a foreign navy is by destroying that foreign navy. For defence against a hostile fleet which actually attacks them, the coast cities must depend upon their forts, mines, torpedoes, submarines, and torpedo-boats and destroyers. All of these together are efficient for defensive purposes, but they in no way supply the place of a thoroughly efficient navy acting on the offensive; for parrying never yet won a naval fight. It can only be won by hard hitting, and an aggressive sea-going navy can alone do this hard hitting of the offensive type."

The breezy advocacy of the President has not, however, been sufficient to bring Congress into line with himself, for only two battleships instead of the four for which he asked have been voted.

The completed strength of the United States Navy comprises twenty-five battleships, none of which was commenced before 1893; fifteen armoured cruisers, dating from 1891 onwards; and twenty-two protected cruisers. There are also twenty-nine destroyers (28–30 knots);

twenty-nine torpedo-boats (20–28 knots); and twelve submarines. The fleet under construction is as follows, the date being that of completion :—

BATTLESHIPS.

		Displacement (Tons).	Speed (Knots).	Main Armament.
1910	Delaware	... 20,000	... 21	... ten 12-inch,
1910	New York			fourteen 5-inch.
1909	South Carolina	... 16,000	... 18·5	... eight 12-inch,
1909	Michigan			twenty-two 14-pr.

Also two destroyers and three submarines.

What the object of the United States is in building such a fleet as she now possesses, and, further, in being determined to increase it, it is difficult to say. Ostensibly it is for the maintenance of the integrity of the Western Hemisphere, to uphold the Monroe Doctrine; but the only possible challenger of that principle is Germany, and the United States fleet to-day is already at least twice as strong, not in units, but in gun-power, as that of Germany. There are no great oversea possessions to defend, and no very extensive mercantile marine. Can it be that the people of the United States are better judges of the aspirations of Japan than we, who have withdrawn our fleet from Far Eastern waters? Whatever be its *raison d'être*, however, the fleet is there, and it cannot be altogether ignored, no matter what may be the comparisons between blood and water.

May a mild protest be entered here against the common practice of talking about the "American fleet"? There is no "American fleet" any more than there is a European fleet. America is a continent—or two continents—and the United States has no more right than Peru to claim the monopoly of its name.

FRANCE

In the French Navy is to be found one of the most striking evidences of the truth of the old adage that "to stand still is to go back." At the beginning of the twentieth century the French fleet was, without doubt, the next strongest in the world after our own; but in the brief intervening period of seven years she has to thank her policy of marking time for the fact that she is now well left behind by the United States and pressed very closely by Germany. This is the position she takes merely on the reckoning of *matériel;* if the efficiency of the *personnel* be taken into consideration France drops at least to the fourth, and possibly to the fifth, place amongst the naval Powers of the world.

Socialistic doctrines are necessarily destructive of efficiency in a fighting force, where discipline is the very first essential. Liberty, Equality and Fraternity are very good ambitions in the abstract, and would be to-day, as they were a hundred years ago, excellent battle-cries for a mob; but not one of them is consonant with the maintenance of a disciplined force, be it civil or military, and to this fact is due the chaotic state of the French Navy to-day. The whole force is seething with incipient mutiny, of which inefficiency is the prolific product, to such an extent that a recapitulation of its material strength gives a wholly exaggerated idea of its fighting worth. French politicians and statesmen have declared over and over again that their navy should be capable of dealing with that of Germany; but although France still maintains a small numerical superiority afloat over her northern neighbours, the contrast between the *personnels* of the two fleets is such

that even with something considerably less than her present strength Germany could reasonably hope for victory in the event of a conflict.

The naval traditions of France being what they are, such a state of affairs cannot be regarded as other than most regrettable: the more so because it is extremely difficult to remedy, since it is the outcome of a political system of a hundred years' standing, and because there is a possibility that in certain circumstances the British and French navies might be called upon to fight side by side. Many committees have been appointed and many suggestions made for ridding the navy of the pernicious influences which permeate and stultify it, but it is doubtful whether any appreciable advance can be made so long as socialistic doctrines continue to receive the support accorded to them by a large section of the community. In the uprising of a man with something of Napoleon's genius for handling men the salvation of French sea-power might be found; but outside this there appears to be no hope for it save in the complete overthrow of the nation's present political system.

A great effort will probably be made to set our neighbour's naval house in order as a result of the report of M. Chaumet, issued in November, 1907. In that report the existent evils are frankly recognised, though M. Chaumet would seem to be over sanguine as to the possibility of remedying them. The reporter, after pointing out that the present situation goes back in its milder forms for more than half a century, says that sacrifices seem predestined to sterility; expenses are multiplied in vain; the force, which is the only thing that matters, does not increase, but even diminishes. The administration is absorbing all the substance of the fighting fleet, and on all

sides there are instability and anarchy. There is no comradeship between the various branches (so much for fraternity!), and confidence in the future is overclouded. M. Chaumet hopes to overcome these evils by the appointment of an Extra-Parliamentary Commission of naval officers, admiralty officials, a few specialists and some parliamentary authorities on naval affairs — a remedy which, however, does not promise to be any more efficient than on the innumerable occasions on which it has before been tried in the last fifty years. M. Chaumet makes a number of suggestions as to future administration, to which, however, little weight attaches, whatever may be their intrinsic worth. He suggests that France should embark on a fixed programme of naval construction, similar to that followed in Germany; that the old and valueless ships should be removed from the list of the fleet; that Brest and Lorient should be reserved for the construction of large ships, Rochefort and Cherbourg for the construction of torpedo and other small craft, and Toulon as a port of repair and refit for the ships of the Mediterranean Fleet. The chaotic condition of the dockyards, he considers, would be largely remedied by the exclusion of anarchists, anti-militarists, convicts and inefficients; all of which, though excellent in intention, would probably result in closing the yards altogether. Other drastic changes, in organisation, administration, training, etc., are advocated, the number and scope of the suggestions being of themselves sufficiently eloquent testimony to the sorry condition of the French fleet to-day.

French *matériel* has naturally suffered in no small degree from the inefficiency of the *personnel;* but a brief survey of it will be useful if only as showing what strength

our cross-Channel neighbours would have to hand if a naval Napoleon were to arise to-morrow. There are twenty-four sea-going battleships, of which, however, only seventeen are less than twenty years old, although all the others have been reconstructed in the last six years. The Dreadnought type has not yet found favour in France, and in her latest ships, the six of the Danton class, the general outlines of the British *Lord Nelson* have been followed, the French vessels carrying two more guns in the secondary battery, and sacrificing two inches of water-line armour. The four Démocraties, which are the latest completed ships, are very efficiently protected with a water-line belt 11 to 7 in. in thickness, and are armed with four 12-in. and ten 7·6-in. guns. The *République* and *Patrie* are of the same general type, but carry eighteen 6·4-in. guns in place of the 7·6-in. weapons of the *Démocratie.*

The earlier ships call for no special remark. As a general rule they are better armoured and more weakly armed than their British contemporaries. In addition to the sea-going battleships proper, France possesses nine "coast-service battleships," most of which would be capable of performing useful service in the event of war with a neighbouring Power, and twenty-one armoured cruisers, most of them heavily-armed and well-protected vessels of medium speed (18–23 knots).

There is also a number of protected cruisers and "avisos," seventeen of the latter being fitted for mine-laying; fifty-three torpedo-boat destroyers; forty-one sea-going torpedo-boats; two hundred and seventy-one torpedo-boats of the Defence Mobile; and seventy-five submersibles and submarines.

The following are the ships under construction:—

BATTLESHIPS

Danton, Mirabeau, Condorcet, Voltaire, Diderot, Vergniaud — 18,400 tons; armament, four 12-in.; twelve 9·4-in.; armour belt, 10 to 6 in.; speed (turbines) 18·75 knots. To be completed 1910–12: two in each year.

ARMOURED CRUISERS

Edgar Quinet, Waldeck Rousseau — 14,000 tons; armament, fourteen 7·6-in; armour belt, 6¾ to 3 in.; speed, 23 knots. To be completed 1908–9.

Ernest Renan — 13,644 tons; armament, four 7·6-in.; twelve 6·4-in.; armour belt, 6¾ to 3½ in.; speed, 23 knots. To be completed 1908.

TORPEDO CRAFT

Destroyers: 12 (25–28 knots; 431-70 tons). To be completed 1908–9.
Torpedo-boats: 20 (26 knots; 97½ tons). „ „ 1908.
Submersibles: 28 ($\frac{15}{10}$ knots; 350–800 tons). „ „ 1908–10.

Between 1901 and 1907 the French Naval Estimates remained practically stationary, oscillating between 12¼ and 13¼ millions. In the first-named year they were £13,107,697, and in the last-named, £12,486,792.

JAPAN

The Empire of the Mikado is often referred to as the "Britain of the East." From a purely naval point of view it may be doubted whether the "Germany of the East" would not be a more fitting title, for certainly her naval development during the last couple of decades is in its main outlines very similar, at any rate in extent and rapidity, to that of our North Sea neighbours.

As is only to be expected in an insular nation—or, as Japan was in ancient days, an insular collection of nations or tribes—there are very early traces of seafaring amongst

the inhabitants of the islands of Japan. Shipbuilding is known to have been an important industry there at least a century before the Christian era, and naval forces played a not inconsiderable part both in the oversea excursions of the Japanese and in the many internal wars with which the islands were frequently disturbed. The rigid prohibition of intercourse with the outer world naturally acted as a great impediment to progress, but as soon as the barriers were broken down and the light of the West began to penetrate into the long-secluded corners of Eastern mind and material, Japan, realising that her security as an insular nation depended wholly upon her ability to prevent her enemies from reaching her shores, set about the construction of a fleet which, within the limits which her finances would permit, should ensure her freedom and immunity from attack.

In 1858 Queen Victoria presented to the Mikado, through Lord Elgin, a steam yacht, and at that time the Imperial Navy consisted of one paddle steamer and three sailing vessels. From that year her naval awakening may be really dated. With the assistance of the British Admiralty, who placed at the Emperor's disposal the services of many British naval officers, and more especially those of the late Commander Hammond and Commander (now retired Admiral Sir) A. L. Douglas, the Imperial Navy was reorganised, training colleges were established, and every facility offered for Japanese officers to go to sea in British ships to gain experience in their working and management. The efficacy with which the traditions of the British Navy were grafted on to the sea-sapling of the East has twice been demonstrated in recent years.

The strength of the Japanese Navy at various periods since 1889 can be seen at a glance in the annexed table :—

	Built.				Building.			
Year.	Battle-ships.	Armoured Cruisers.	Protected Cruisers.	Torpedo Craft.	Battle-ships.	Armoured Cruisers.	Protected Cruisers.	Torpedo Craft.
1889	1	—	8	27[2]	—	—	3	?
1895	3	—	13	23[2]	2	—	1	7
1900	6	2	19	32[2]	1	4	1	25
1907[1]	13	11	11	116[3]	4	4	2	15 (30 projected).

Five submarines built and 7 building in 1907.

The Japanese Navy now stands fifth in order of strength amongst the fleets of the world, with an aggregate effective displacement, according to a return issued by the United States Navy Department in November, 1907, of 374,701 tons.

Ten years ago the Japanese Navy consisted of five battleships, only three of which were less than twenty years old, and one modern armoured cruiser. There was, in addition, a number of protected cruisers, generally in varying stages of obsolescence, and about forty torpedo craft. In those days we maintained in Far Eastern waters a force consisting of one battleship, three armoured and five protected cruisers, eleven gunboats and two destroyers. In the intervening ten years the Japanese Navy has increased numerically in armoured ships by four hundred per cent, and while the number of protected cruisers has remained practically constant, the strength of her torpedo flotillas has bounded to 143.

Six years ago, when the Japanese fleet was still more or less in the embryo stage, we had five first-class battleships, two armoured and twelve protected cruisers, and twenty-

[1] Figures for 1907 include the following units captured in the war with Russia: 7 battleships, 1 armoured cruiser, 4 protected cruisers, 3 torpedo-boat destroyers.

[2] Sea-going vessels only.

[3] All classes.

two other vessels in the Far East. To-day we have whittled down that strength to four armoured cruisers, two protected cruisers and seven destroyers.

Of course there is an alliance between ourselves and Japan; but although this is perhaps regarded in England as being a very satisfactory state of affairs, it should not be forgotten that our kinsfolk in Canada and Australia, who are some thousands of miles nearer the Yellow Sea than we are, do not take such a happy view. We may be apt to think this of little importance, since the affairs of the Empire are directed from London and not from Sydney or Ottawa; but it is well to bear in mind that not for a century—a century, too, of almost continual fighting—has England engaged in a war for her own safety. With the exception of the Crimean War—and that is not really an exception, since it was fought to keep the road to India in friendly, or at least malleable, hands—every conflict in which we have taken part has been undertaken in defence of our possessions oversea.

International politics are proverbially changeable, and it has always been a motto with British statesmen that peace depends upon our power to enforce it. Freedom of trade certainly does; and trade competition in the Far East is a question that, before many years are over, will give statesmen many an uneasy half-hour. This fact is fully realised in Germany. In a recent issue of the *Kreuz Zeitung* Professor Schiemann declared that "England will not be able to avoid sending back a part of her fleet to Far Eastern stations," and it would certainly be to Germany's interest to hasten the necessity if she can. The greater the force we have in the Pacific the less we shall have in the North Sea.

There is another side to this question to which, seeing

how many ventures of the sort we are involved in and threatened with, it may not be out of place to draw attention. We have decimated our strength in the Far East because of our alliance with Japan. We have reduced our forces in the Mediterranean to less than a half of their former strength because we enjoy an *entente cordiale* with a decadent and socialist-sodden France. We have abolished the North America Squadron because "blood is thicker than water." So far we have been able to get along fairly well, since Germany is, unlike ourselves, still standing upon her own feet and independent either of alliances, *ententes*, or blood-relations. But what should we do with the British Navy if the Government should take it into its head to swear eternal friendship with the Emperor William? To be logical we should have to abolish the Navy altogether. *THEN* we should see the value of international friendships!

Japan at the present moment is building the most formidable battleships and armoured cruisers in the world. After the recent war the statement was frequently made and widely believed in England that all the information which the Japanese obtained during that struggle was communicated to the British Government; but not only is this crediting the Asiatic with a *naïveté* of which few who know his character can believe him capable, but it would also appear to be belied by the comparison between the latest ships building for her and Great Britain. That comparison is as follows:—

BATTLESHIPS

		Japanese. "N" & "B".		British. *Bellerophon.*
Displacement		20,750 tons	...	18,600 tons.
Speed		20 knots	...	20·75 knots.
Armament	Twelve	12-in.	...	Eight 12-in.
	Ten	6-in.	...	Twenty 4-in.
	Twelve	4·7-in.		

ARMOURED CRUISERS

		Japanese. "X" & Y".		British. *Inflexible.*
Displacement		18,450 tons.	...	17,250 tons.
Speed		25 knots	...	25 knots.
Armament	Four	12-in.	...	Eight 12-in.
	Eight	10-in.	...	Sixteen 4-in.
	Eight	6-in.		
	Ten	4·7-in.		

Between the battleships there is no fundamental difference, though the superiority of the Japanese armament will at once be apparent; but the difference in the armament of the cruisers argues something more than individual deviation in dealing with the same facts, while the superior power of the Japanese ship is again very noticeable.

The following figures are also interesting. They show that whatever may be the effect of alliance upon Great Britain, Japan is determined to make herself a self-contained maritime Power.

ADDITIONS TO THE JAPANESE NAVY BETWEEN 1899 AND 1904.[1]

	Built in Japan.		Built abroad.		Built in England.
Battleships	—	...	5	...	5
Armoured cruisers	—	...	8	...	4
Torpedo-boat destroyers	4	...	15	...	15

VESSELS LAID DOWN FOR THE JAPANESE NAVY BETWEEN 1905 AND 1907

	In Japan.		Abroad.		In England.
Battleships	4	...	—	...	—
Armoured cruisers	6	...	—	...	—
Destroyers	32	...	—	...	—

MINOR NAVIES

RUSSIA

It will take Russia very many years to recover the position from which she was displaced by the war with Japan. She has sunk to the sixth place amongst the naval

[1] Excluding captures.

Powers, and it would not appear too much to say that, without such an expenditure as the depleted condition of her exchequer is in no way prepared to meet, she can never hope to advance even one step up the ladder; unless, indeed, some other nation meets a fate similar to that which overtook Russia in the Far East. She has only two modern completed battleships outside the Black Sea—the *Slava* and *Tsarevitch*—and four under construction, of which two will be completed in 1908–9 and two in 1911–12. The latter vessels are of 22,000 tons, and will be armed with ten 12-in. and twenty 4·7-in. guns, with a speed of 21 knots.

A fine new armoured cruiser, the *Rurik*, has just been completed by Messrs. Vickers, Sons & Maxim at Barrow. This vessel, which is of 15,000 tons displacement, has a belt of 6·3 in. of armour, and is armed with four 10-in. and eight 8·8-in. guns. Two similar vessels are building in Russia, as well as six others of a smaller type.

Since the war a large number of destroyers has been built, chiefly by national subscription, and Russia now possesses fifty-four of these vessels. She has also about thirty submarines.

Much was written in 1906 about an extensive programme of new construction upon which Russia was about to embark, but it does not appear to have fructified.

ITALY

The object before the Italian Government is to possess a navy which shall make their country the desirable ally of a stronger Power in the event of that Power being engaged in warlike operations in the Mediterranean. Such was the statement made by the reporter on the latest

Italian estimates, Signor Arlotta, and there is no doubt but that Italy possesses such a navy at this moment. She has ten battleships less than twenty years old, of which the three of the Vittorio Emanuele class (a fourth is building)[1] are, for their size, the finest vessels afloat. On a displacement of 12,625 tons (metric) they carry two 12-in. and twelve 8-in. guns, are protected by an armour belt from 10 to 4 in. thick, and steam an easy 22 knots.

Three or four new battleships are to be built under the programme of 1907–8, being, according to the information available, of 16,000 tons, and armed with eight 12-in. guns mounted on the same principle as in the British cruisers of the Inflexible class, so that all might be brought to bear on either broadside.

The Italian Navy contains six armoured cruisers of fair gun-power and poor speed (17–19 knots), with four of an improved type under construction, to be finished two in 1908, one in 1909, and one in 1910. These vessels, known as the S. Giorgio class,[2] are of 9830 tons, and are armed with four 10-in. and eight 8-in. guns, have a belt of 8 in. of armour, and steam 22·5 knots. The rest of the fleet is made up of three scouts, two mining ships, twelve submarines, twenty-eight destroyers, forty-two sea-going torpedo-boats, and eight other torpedo-boats. A number of older vessels are relegated to coast service.

AUSTRIA-HUNGARY

Although small, the Austro-Hungarian Navy contains some very useful ships. Nine battleships are completed,

[1] *Vittorio Emanuele, Regina Elena, Roma, Napoli.*
[2] *S. Giorgio, S. Marco, Pisa, Amalfi.*

three of 10,600 tons, with an armament of four 9·4-in. and twelve 7·6-in. guns; three of 8340 tons, with three 9·4-in. and twelve 6-in. guns; and three of 5600 tons, with four 9·4-in. and six 6-in. guns. There are also three armoured cruisers and five protected cruisers, seven torpedo-gunboats, and forty-nine destroyers and torpedo-boats. She also possesses six 400-ton monitors, armed with 4·7-in. guns, for service on the Danube.

Under construction for the Austro-Hungarian Navy are three battleships of 15,000 tons, which are to be armed with four 12-in. and eight 9·4-in. guns, and to steam 20 knots. They are to be completed one in each of the years 1910–12. The only other ships building are a few torpedo craft.

SPAIN

Ten years after the Hispano-American War Spain is beginning to think about rebuilding her navy—it is impossible to say yet whether any further progress will be made. A Commission on Naval Reform was appointed in 1907, and in its report it recommended the expenditure of 198,654,000 pesetas (£7,940,000) on the reconstruction of the fleet, etc.

This sum was allotted as follows:—To Ferrol, for bringing the dockyard up to date, 11,450,000 pesetas. To Cartagena, for powder magazines, storehouses, jetties, etc., 370,040 pesetas. To Lacarraga, for the building of a new basin, etc., 3,184,000 pesetas. For building a number of small steamers and boats for service in the three ports, torpedo craft, and wireless telegraphy, 3,120,000 pesetas. For building three battleships of 15,000 tons each, 135,000,000 pesetas. For building three destroyers and three submersibles, 10,300,000 pesetas. For building 24

torpedo-boats, 6,080,000 pesetas. For completing the cruisers *Reina Regente* and *Cataluna* and four gunboats or coastguard vessels, and for unforeseen expenditure, 11,150,000 pesetas.

This programme has been adopted.

BRAZIL

The inclusion of Brazil amongst the minor naval Powers is due to the fact, which has hitherto proved inexplicable, that that country has placed orders in England for the construction of two battleships of 21,000 tons. Speaking of these vessels, which are building—one by Messrs. Armstrong, Whitworth and Co. and one by Messrs. Vickers, Sons and Maxim—the *Times* in a recent issue stated:—"Some time ago there was a rumour that the new British Dreadnoughts were to have 13·5-in. guns instead of 12-in. weapons. It was known that such guns were building. It now appears that they are for the two Brazilian battleships. . . . The guns are being built by Armstrongs. This marks a tremendous step in naval construction and armament. The piercing power of a shell fired from such a gun will be greater than that of any shell now in use. The guns will be mounted in special barbettes, and will be so arranged that the four will be able to concentrate their fire on either broadside. . . . The battleships are to be of 21,000 tons displacement, with a breadth of about 84 feet, and the length is to be exceptional. Messrs. Vickers are building the engines for both of these ships. They are of the ordinary reciprocating type, and will develop 23,000 indicated horse-power."

Needless to say, few people believe that these vessels

will ever reach a South American port. The question which is occupying the minds of most is, Into whose hands will they ultimately find their way? They would prove a formidable addition to the naval force of any Power.

APPENDIX

I. BRITISH AND GERMAN ARMOURED SHIPS (*completed*)

Corrected to May, 1908

BATTLESHIPS—GREAT BRITAIN

Year of Launch.	Ships.	Tonnage.	Main Armament.
1906	Dreadnought	17,900	10 12-in.
,,	Lord Nelson	16,500	4 12-in. ; 10 9·2-in.
,,	Agamemnon		
1905	Hibernia	16,350	4 12-in. ; 4 9·2-in. ; 10 6-in.
,,	Africa		
1904	Britannia		
,,	New Zealand		
1903	Dominion		
,,	King Edward VII		
,,	Hindustan		
,,	Commonwealth		
,,	Triumph	11,800	4 10-in. ; 14 7·5-in.
1902	Swiftsure	11,800	
1901	Duncan	14,000	4 12-in. ; 12 6-in.
,,	Cornwallis		
,,	Exmouth		
,,	Russell		
,,	Albemarle		
1902	Queen	15,000	4 12-in. ; 12 6-in.
,,	Prince of Wales		
1899	Venerable		
,,	London		
,,	Bulwark		
,,	Implacable		
1898	Irresistible		
,,	Formidable		
1899	Vengeance	12,950	4 12-in. ; 12 6-in.
,,	Glory		
1898	Albion		
,,	Ocean		
,,	Goliath		
1897	Canopus		
1896	Illustrious	14,900	4 12-in. ; 12 6-in.
,,	Cæsar		
,,	Hannibal		
,,	Mars		
1895	Jupiter		
,,	Victorious		
,,	Prince George		
,,	Majestic		
1894	Magnificent		
1892	Royal Oak	14,150	4 13·5-in. ; 10 6-in.
,,	Revenge		
,,	Resolution		
,,	Ramillies		
,,	Repulse		
1891	Empress of India		
,,	Royal Sovereign		
,,	Hood		
1892	Centurion	10,500	4 10-in. ; 10 6-in
,,	Barfleur		
1888	Nile	11,900	4 13·5-in. : 6 6-in.
1887	Trafalgar		

BATTLESHIPS—GERMANY

Year of Launch.	Ships.	Tonnage.	Main Armament.
1905	Hannover	13,200	4 11-in. ; 14 6·7-in.
,,	Pommern		
1904	Deutschland		
,,	Lothringen	13,200	4 11-in. ; 14 6·7-in.
1903	Elsass		
,,	Preussen		
,,	Hessen		
1902	Braunschweig		
1901	Schwaben	11,830	4 9·4-in. ; 18 6-in.
,,	Mecklenburg		
,,	Zahringen		
,,	Wettin		
1900	Wittelsbach		
,,	Kaiser Barbarossa		
1899	K. Karl der Grosse	11,150	4 9·4-in. ; 18 6-in.[1]
,,	K. Wilhelm der Grosse		
1897	K. Wilhelm II.		
1896	K. Friedrich III		
1892	Worth	10,060	6 11-in. ; 8 4·1-in.
1891	Brandenburg		
,,	Weissenburg		
,,	Kurfurst F. Wilhelm		

[1] Four 6-in. guns are being removed from these ships.

COAST SERVICE BATTLESHIPS

1895	Aegir	4150	3 9·4-in.
1894	Odin		
1893	Hagen		
1892	Hildebrand		
,,	Heimdall		
1891	Frithjof		
1890	Beowulf		
1889	Siegfried		
1880	Baden	7370	6 10·2-in.
1878	Wurtemburg		
,,	Bayern		
1877	Sachsen		
1884	Oldenburg	5200	8 9·4-in.

(The above coast service battleships are of very little fighting value, though they might be capable of useful work in the North Sea.)

ARMOURED CRUISERS—GREAT BRITAIN

Year of Launch.	Ships.	Tonnage.	Speed (knots).	Main Armament.
1907	Inflexible	17,250	25	8 12-in.
,,	Invincible			
,,	Indomitable			
,,	Defence			
1906	Minotaur	14,600	23	4 9·2-in. ; 10 7·5-in.
,,	Shannon			
1905	Warrior	...	...	6 9·2-in. ; 4 7·5-in.
,,	Achilles	13,550	22·3	
,,	Natal			
,,	Cochrane			
1904	Duke of Edinburgh	...	...	6 9·2-in. ; 10 6-in.
,,	Black Prince			
,,	Devonshire	10,850	22·25	4 7·5-in. ; 6 6-in.
,,	Argyll			
,,	Roxburgh			
1903	Carnarvon			
,,	Hampshire			
,,	Antrim			
1901	Drake	14,100	23	2 9·2-in. ; 16 6-in.
,,	King Alfred			
,,	Leviathan			
,,	Good Hope			
1899	Cressy	12,000	21	2 9·2-in. ; 12 6-in.
1900	Aboukir			
,,	Hogue			
1901	Bacchante			
,,	Euryalus			
1899	Sutlej	9800	23	14 6-in.
1902	Cornwall			
,,	Cumberland			
,,	Berwick			
,,	Donegal			
1903	Suffolk			
1902	Lancaster			
1901	Bedford			
,,	Monmouth			
,,	Essex			
,,	Kent			

ARMOURED CRUISERS—GERMANY

Year of Launch.	Ships.	Tonnage.	Speed (knots).	Main Armament.
1906	Scharnhorst . .	11,600	22·5	8 8·2-in. ; 6 6-in.
,,	Gneisenau . .			
1904	Yorck . . .	9050	21	4 8·2 in. ; 10 6-in.
1903	Roon . . .			
1902	Friedrich Karl . .			
1901	Prinz Adalbert . .			
1900	Prinz Heinrich . .	8930	20	2 9·4-in. ; 10 6-in.
1897	Fürst Bismarck. .	10,700	19	4 9·4-in. ; 12 6-in.

II. THE BRITISH FLEET
(excluding armoured ships)

COMPLETED SHIPS

PROTECTED CRUISERS

Year of Launch.	Ships.	Tonnage.	Speed (knots).	Main Armament.
1895	Powerful	14,200	22	2 9·2-in. ; 16 6-in.
,,	Terrible			
1898	Argonaut	11,000	20·5	16 6-in.
,,	Ariadne			
,,	Amphitrite			
,,	Spartiate			
1897	Andromeda			
,,	Europa			
,,	Niobe			
1896	Diadem			
1892	St. George	7350	19	2 9·2-in. ; 10 6-in.
,,	Gibraltar			
,,	Grafton			
,,	Theseus			
1891	Endymion			
,,	Hawke			
1890	Edgar			
1892	Crescent	7700	19	1 9·2 in. ; 12 6-in.
1891	Royal Arthur			
1897	Vindictive	5750	19	10 6-in.
1896	Arrogant			
,,	Furious			
,,	Gladiator			
1902	Challenger	5900	21	11 6-in.
,,	Encounter			
1898	Hermes	5600	20	11 6-in.
,,	Hyacinth			
,,	Highflyer			
1896	Dido	5600	19·5	11 6-in.
,,	Doris			
,,	Isis			
1895	Talbot			
,,	Venus			
,,	Minerva			
,,	Juno			
,,	Diana			
1894	Eclipse			
1893	Astræa	4360	19·5	2 6-in. ; 8 4·7-in.
,,	Cambrian			
,,	Charybdis			
,,	Flora			
,,	Forte			
,,	Fox			
,,	Hermione			

II. THE BRITISH FLEET (*excluding armoured ships*)

COMPLETED SHIPS

PROTECTED CRUISERS—*continued*

Year of Launch.	Ships.	Tonnage.	Speed (knots).	Main Armament.
1891	Æolus	3400	17	2 6-in. ; 6 4·7-in.
,,	Brilliant			
,,	Indefatigable			
,,	Scylla			
,,	Sappho			
1890	Latona			
,,	Terpsichore			
,,	Sirius			
1904	Diamond	3000	21·75	12 4-in.
,,	Sapphire			
1903	[1] Amethyst			
,,	Topaze			
1900	Pandora	2135	20·5	8 4-in.
1899	Pioneer			
1898	Prometheus			
,,	Psyche			
1897	Perseus			
,,	Pyramus			
,,	Pegasus			
1896	Proserpine			
,,	Pelorus			
1889	Barham	1830	20	6 4·7-in.

[1] Turbine.

SCOUTS

1905	Skirmisher	2940	25	10 12-pounders.
1904	Adventure	2670		
,,	Attentive	,,		
,,	Forward	2850		
,,	Foresight	,,		
,,	Pathfinder	3000		
,,	Patrol	2950		
,,	Sentinel	2940		

TORPEDO DEPÔT SHIPS

1889	Vulcan	6620	—	—
1878	Hecla	6400	—	—
	Tyne	3560	—	—

The protected cruisers Blake and Blenheim, of 9000 tons displacement and launched respectively in 1889 and 1890, have also been fitted as depôts for torpedo-boat destroyers. The St. George is about to be taken in hand.

TORPEDO-BOAT DESTROYERS

Year of Launch.	Ships.	Tonnage.	Speed.	
1907	[1] Afridi	790	33	All exceeded nominal speed on trial. Tartar made a world's record with 37·037 knots. All have turbines and burn oil fuel only.
,,	[1] Cossack			
,,	[1] Ghurka			
,,	[1] Mohawk			
,,	[1] Tartar			
1905	Colne	600	25·5	
,,	Gala			
,,	Garry			
,,	Ness			
,,	Nith			
,,	Ouse			
,,	Swale			
,,	Wear			
1904	Boyne			These destroyers, known as the River class, are all excellent sea-boats, and for general service are quite as fast as the nominal 30-knot vessels, besides being much more stoutly built and comfortable. They carry about 130 tons of coal, and at economical speed have a radius of some 2000 miles. Armament: 4 12-prs. (originally 1 12-pr. and 5 6-prs.).
,,	Chelmer			
,,	Doon			
,,	Kale			
,,	Rother			
,,	Liffey			
,,	Moy			
,,	Ure			
,,	Derwent	550	25·5	
,,	Ribble			
,,	Jed			
1903	[1] Eden			
,,	Exe			
,,	Itchen			
,,	Usk			
,,	Teviot			
,,	Ettrick			
,,	Foyle			
,,	Erne			
,,	Arun			
,,	Blackwater			
,,	Cherwell			
,,	Dee			
,,	Kennet			
,,	Waveney			
,,	Welland			
1902	[1] Velox	440	27	

[1] Turbine.

TORPEDO-BOAT DESTROYERS—*continued.*

Year of Launch.	Ships.	Tonnage.
1901	Arab	470
,,	Bullfinch	300
,,	Electra	,,
,,	Falcon	,,
,,	Kangaroo	335
,,	Leven	300
,,	Lively	385
,,	Myrmidon	370
,,	Orwell	360
,,	Ostrich	370
,,	Recruit	350
,,	Roebuck	385
,,	Sprightly	,,
,,	Success	380
,,	Syren	390
,,	Thorn	380
,,	Tiger	,,
,,	Vigilant	,,
,,	Vixen	400
1900	Greyhound	385
,,	Racehorse	,,
1899	Lee	365
,,	Peterel	370
,,	Stag	320
1898	Albatross	430
,,	Coquette	335
,,	Cygnet	,,
,,	Cynthia	355
,,	Dove	345
,,	Kestrel	350
,,	Mermaid	355
,,	Spiteful	365
,,	Taku	305
,,	Vulture	345
1897	Bittern	355
,,	Cheerful	,,
,,	Express	465
,,	Fairy	355
,,	Fawn	360
,,	Flirt	,,
,,	Flying Fish	,,
,,	Gipsy	355
,,	Leopard	350
,,	Osprey	355
,,	Panther	,,
,,	Seal	,,
,,	Sylvia	350
,,	Violet	,,
,,	Wolf	355
1896	Avon	,,
,,	Angler	310
,,	Bat	360
,,	Brazen	315
,,	Crane	360
,,	Earnest	355
,,	Fame	310
,,	Foam	,,
,,	Griffon	355
,,	Locust	,,
,,	Mallard	310
,,	Otter	360
,,	Star	350
,,	Thrasher	355
,,	Virago	,,
,,	Whiting	360
1895	Desperate	310
,,	Quail	355

(The above destroyers all have a nominal speed of 30 knots, but the *maximum* for any of them is now about 27 or 28, with an average sea speed of 23 knots. Exceptions are the Albatross, which has a nominal speed of 32 knots; and the Express and Taku, with 31. The last named is a Schichau boat, and was taken from China during the Boxer troubles. The armament of the Taku is 6 3-prs.; for all the others, 1 12-pr. and 5 6-prs.)

TORPEDO-BOAT DESTROYERS—*continued*

Year of Launch.	Ships.	Tonnage.	
1895	Bruizer	265	These vessels are all virtually obsolete, and none is now kept in full commission. Their nominal speed is 27 knots, but 20 or 21 is their *maximum* sea speed. The armament of all is 1 12-pr. and 5 3-prs., with the exception of the Banshee, Contest. Daring, Dragon, Ferret, Havock, Hornet, and Lynx, which have 2 3-prs. less. Most of the "27-knotters" and all other British destroyers are fitted with two torpedo tubes.
"	Dasher	255	
"	Fervent	275	
"	Handy	"	
"	Hardy.	260	
"	Hart .	275	
"	Haughty	260	
"	Hunter	275	
"	Janus .	"	
"	Lightning	"	
"	Porcupine	"	
"	Opossum	295	
"	Ranger	"	
"	Salmon	305	
"	Snapper	"	
"	Spitfire	295	
"	Sunfish	"	
"	Swordfish	"	
"	Teazer	320	
"	Wizard	"	
"	Zebra .	310	
"	Zephyr	275	
1894	Ardent	265	
"	Banshee	290	
"	Boxer .	265	
"	Charger	270	
"	Conflict	320	
"	Contest	290	
"	Dragon	"	
"	Hasty .	270	
"	Lynx .	280	
"	Rocket	"	
"	Shark .	"	
"	Starfish	265	
"	Sturgeon	"	
"	Surly .	280	
1893	Daring	260	
"	Ferret .	280	
"	Havock	240	
"	Hornet	"	

TORPEDO-BOATS

Year of Launch.	Numbers.	Tonnage.	
1906	[1] 1 to 12	225	Built as "Coastal Destroyers." Speed, 26 knots; armament, 2 12-prs., 2 torpedo-tubes. All fitted with turbines and for burning oil fuel.
1901–3	98, 99 / 107 to 117	180–200	Speed, 25 knots; armament, 3 12-prs., 3 torpedo-tubes.
1893–95	89 to 97	100–130	Speed, 22 knots; armament, 3 12-prs., 3 torpedo-tubes.

There are also 47 old boats of no fighting value, built between 1884 and 1890, with displacements of 60 to 85 tons and speeds of 15 to 18 knots.

[1] Turbine.

SUBMARINE-BOATS

Date.	No.	Class.	Displacement Submerged.	Speed.	Torpedo Tubes.	Surface Radius.
1901–2	5	Hollands	120	8	1	Kts.
1903	4	A 1–A 4	180	11	2	1000
1904–6	9	A 5–A 13	204	11.5	,,	,,
1905–6	11	B 1–B 11	313	13	,,	1500
1905–7	18	C 1–C 18	,,	,,	,,	,,

The old cruisers Thames, Forth, Mercury, and Bonaventure have been fitted as sea-going depôt ships for submarines.

MINE-LAYING VESSELS

The cruisers Iphigenia and Thetis are specially fitted for dropping mines. The Apollo, Melampus, and Intrepid are about to be taken in hand.

VESSELS OF MINOR IMPORTANCE

The following vessels, though of practically no fighting value, are retained on the Navy List for various purposes, and might conceivably be of use for some of the minor duties of war:—

SLOOPS, DESPATCH VESSELS, ETC.

Cadmus, Clio, Espiegle, and Shearwater. Displacement, 1070 tons; speed, 13 knots; armament, 6 4-in.

Alacrity, 1700 tons; speed, 15 knots; armament, 10 6-prs.

Sphinx (paddle steamer, for service in the Persian Gulf), 1100 tons; speed, 12 knots; armament, 1 6-in.; 6 4-in.

Torch, 960 tons; speed, 13 knots; armament, 6 4-in.

GUNBOATS

Bramble, Britomart, Dwarf, and Thistle. 700 tons; speed, 13 knots; armament, 2 4-in.

Lapwing and Redbreast. 800 tons; speed, 13 knots; armament, 6 4-in.

TORPEDO GUNBOATS

Dryad, Halcyon, Harrier, Hazard, and Hussar. 1070 tons; speed, 17 knots; armament, 2 4·7-in.

Gossamer, Seagull, Sharpshooter, Skipjack, Spanker, Speedwell, Circe, Hebe, Jason, Leda, Niger, and Speedy. 700–800 tons; speed, 15 knots; armament, 2 4·7-in.

RIVER GUNBOATS

Kinsha, Nightingale, Robin, Sandpiper, Snipe, Teal, Moorhen, Widgeon, Woodcock, and Woodlark. 85–180 tons; armament, small quick-firers and machine guns.

A number of old iron coast-defence gunboats have been appropriated in connection with the boom defence of naval harbours, and for protection against torpedo attack.

AUXILIARY VESSELS

Assistance, repair-ship, 9600 tons; attached to the Channel Fleet.
Cyclops, repair-ship, 11,300 tons; attached to the Home Fleet.
Aquarius, distilling vessel, 3660 tons; attached to the Channel Fleet.
Maine, hospital ship, 4540 tons; attached to Mediterranean Fleet.
Petroleum, oil-carrying vessel.
Isla, oil-carrying vessel.
Khaki, oil-carrying vessel.

III. THE GERMAN FLEET

(excluding armoured ships)

COMPLETED SHIPS (MAY, 1908)

PROTECTED CRUISERS

Year of Launch.	Ships.	Tonnage.	Speed.	Main Armament.
1905	Königsberg	3420	23·5	10 4·1-in.
1906	Stuttgard			
,,	Nürnberg			
1907	Ersatz Wacht			
1903	Bremen	3250	23	10 4·1-in.
,,	Hamburg			
,,	Berlin			
1904	Lübeck			
,,	München			
1905	Leipzig			
,,	Danzig			
1902	Frauenlob	2715	21·5	10 4·1-in.
,,	Arcona			
,,	Undine			
1900	Thetis	2650	21	10 4·1-in.
,,	Ariadne			
,,	Amazone			
,,	Medusa			
1899	Nymphe			
,,	Niobe			
1898	Gazelle			
1897	Freya	5650	19	2 8·2-in. ; 8 6-in.
,,	Hertha			
,,	Victoria Luise			
1898	Hansa	5880		
1892	Kaiserin Augusta	6300	20·5	12 6-in.
1893	Gefion	3770	20	10 4·1-in.
1888	Irene	4300	18	4 6-in. ; 8 4·1-in.
1887	Prinzess Wilhelm			

TORPEDO-BOAT DESTROYERS

Year of Launch.	Number.	Tonnage.	Speed (knots).
1907	[1]G 137 .	570	33·9
1906	G 132–6	480	28
1904–5	S 126–31	,,	,,
1904	[1]S 125 .	470	29·5
1904–5	S 120–4	380	28
1903	S 114–19	,,	,,
1901–2	G 108–13	360	,,
1901	S 102–7	,,	27
1900	S 90–101	350	,,
,,	D 11, 12	330	31
1898	Taku .	280	30
,,	D 10 .	340	28
1894	D 9 .	380	26
1890	D 7, 8 .	,,	23
1888–9	D 5, 6 .	320	,,
1888	D 3, 4 .	300	20

Although the speed of these destroyers is nominally less than that of British vessels of the same class, the fact that the German craft can in nearly every case maintain their nominal speed gives them the advantage.

Armament from G 132 onwards is 4 4-prs. Earlier vessels 3 4-prs. Taku has 2 4-prs. and 2 torpedo-tubes; all others 3.

G 135 has special armament of 1 15-pr. and 2 4-prs.

G and S signify Germania (Kiel) and Schichau (Elbing) boats respectively. D 10–12 were built at Chiswick. All built before these are obsolete.

[1] Turbine.

TORPEDO-BOATS

1898	G 88, 89	160	26
1897–8	S 82–87	140	,,
1894	S 74–81	125	25
1893	S 66–73	130	23
1892	S 42–65	90	21

These are very feeble vessels. They have 3 torpedo-tubes, and a couple of 1-pr. or 1 4-pr.

SUBMARINES

Date.	Number.	Displacement.	Speed $\left(\frac{\text{above}}{\text{below}}\right)$
1906	U 1	180 tons	$\frac{12}{9}$
1907	U 2, U 3, U 4	?	

Last year U 1 accomplished the voyage from Heligoland to Kiel, round Skagen, a distance of 600 knots, entirely under her own power. The vessel is propelled by two petrol engines, each of 225 h.p. The passage was made in rough weather and with the original supply of fuel.

VESSELS OF MINOR IMPORTANCE

UNPROTECTED CRUISERS

Year of Launch.	Ships.	Tonnage.	Speed (knots).	Main Armament.
1894	Geier	1597	16	8 4·1-in.
1892	Condor	1600		
,,	Cormoran	,,		
,,	Seeadler	,,		
1891	Falke	1550		
1890	Bussard	,,		
1888	Sperber	1100	13	8 4·1-in.
1887	Schwalbe			

TORPEDO GUNBOATS

1895	Hela	2040	20	4 3·4-in.
1892	Comet	960	16	4 3·4-in.
1888	Jagd	1250	17	4 3·4-in.
1886	Greif	2060	18	8 3·4-in.
1882	Blitz	1390	15	6 3·4-in.
,,	Pfeil			

GUNBOATS

1903	Eber	980	12	2 4·1-in.
1901	Panther			
1899	Luchs	980	12	2 4·1-in.
,,	Tiger			
1898	Jaguar	900	12	4 3·4-in.
,,	Iltis			

RIVER GUNBOATS

1903	Vaterland	168	12–10	Small q.f. and machine guns.
,,	Tsingtau			
1899	Vorwarts			

MINE-LAYING VESSELS

Year of Launch.	Ships.	Tonnage.	Speed.	
1906	Nautilus	2000	20	These vessels naturally carry but a light armament. They are all attached to the Mining Divisions at Cuxhaven and Wilhelmshaven.
1890	Pelikan	2360	15	
1877	Otter	130	8	
1867	Rhein	500	9	
1876	Zeiten	975	16	

IV. SHIPS BUILDING FOR THE BRITISH AND GERMAN FLEETS

SHIPS BUILDING—GREAT BRITAIN

BATTLESHIPS

Ships.	Tonnage.	Main Armament.	To be completed.
Bellerophon Téméraire Superb	18,600	10 12-in.	Jan., 1909 ,, ,, Feb. ,,
St. Vincent Collingwood Vanguard	19,300	10 12-in.	Dec., 1909 Feb., 1910 ,, ,,

ARMOURED CRUISERS

Nil.

PROTECTED CRUISER

Boadicea	3300	8 (?) 4-in.	1910

TORPEDO-BOAT DESTROYERS

Ships.	Tonnage.	Speed (knots).	To be completed.
Swift	1800	36	1908
Amazon Saracen	888 893	33	1909
Five others, probably Amazon type			1909–10

TORPEDO-BOATS

Twelve building, 250–280 tons, 26 knots. To be completed 1908.

Twelve to be built under 1907–8 Estimates, similar. To be completed 1909–10.

SUBMARINES

One "D" class, 400 tons, speed $11\frac{1}{2}$ knots; surface radius 2000 miles. To be completed 1909.

Twelve of 1907–8 programme, "D" class, improved. To be completed 1909–10.

*** The following ships are to be laid down in the financial year 1908–9: 1 battleship, 1 armoured cruiser, 6 fast protected cruisers, 16 torpedo-boat destroyers, and six or eight submarines.

SHIPS BUILDING—GERMANY

BATTLESHIPS

Ships.	Tonnage.	Main Armament.	To be completed.
Schleswig-Holstein Schlesein	13,200	4 11-in.; 14 6·7-in.	1908
Ersatz Sachsen Ersatz Bayern	17,960	16 11-in.?	1909[1] ,, [1]
Ersatz Baden Ersatz Wurrtemburg	18,700	?	1910[1] ,, [1]

ARMOURED CRUISERS

Ships.	Tonnage.	Main Armament.	To be completed.
"E"	14,760	10 11-in.	1909[1]
"F"	18,900	12 11-in.	,, [1]

[1] There was some delay in commencing these vessels, and their completion will be delayed from one to two years. All details uncertain.

PROTECTED CRUISERS

Ersetz Pfeil	3800	10 4·1-in.	1908
Dresden			1909
Ersatz Greif			,,
Ersatz Jagd			,,

TORPEDO-BOAT DESTROYERS

Twelve vessels of 525 tons and 30 knots. To be completed 1908.
Twelve vessels, details unknown. To be completed 1909.

TORPEDO BOATS

Twelve vessels, 155 tons and 25 knots. To be completed 1908.

MINE-LAYING VESSEL

Albatross, 1975 tons, 20 knots. To be completed 1908.

SPECIAL SALVAGE VESSEL

Vulcan.—This vessel has been specially designed for use with submarines as a combined salvage ship and dock, and has no counterpart in any other navy. She is 227 feet long, and is really made up of two single hulls, which can be separated or joined together, and is fitted with appliances so that it can be used for both raising and docking a submarine which has come to grief. Above the middle of the two parts of the ship is a powerful crane, with a lifting capacity of 500 tons, which will hoist the submarine out of the water and place her on supports, where she can be repaired. The crane will be worked by electric power, the ship's engines providing the necessary energy both for this and for supplying the submarines. The speed of the vessel is to be 12 knots. She was launched at the Howaldt Works, Kiel, Oct. 1, 1907.

*** The following ships are to be laid down in 1908: 3 battleships, 1 armoured cruiser, 2 protected cruisers, 12 torpedo-boat destroyers.

V. SUMMARY

I. COMPLETED SHIPS (*May*, 1908)

	Battleships.		Armoured Cruisers.		Protected Cruisers.		Destroyers.	Torpedo-boats.	Sub-marines.
	No.	Dis-placement.	No.	Dis-placement.	No.	Dis-placement.			
Great Britain .	53	765,100	38	468,350	75	402,285	147	34	47
Germany . .	22	260,740	8	79,030	29	104,625	59	48	4

II. SHIPS UNDER CONSTRUCTION

Great Britain .	6	113,700	—	—	1	3300	8	24	13
Germany . .	6	99,720	2	33,660	4	15,200	24	12	?

III. TO BE LAID DOWN, 1908

Great Britain .	1	—	1	—	6	—	16	0	?
Germany . .	3	—	1	—	2	—	12	0	?

VI. NAVAL EXPENDITURE, 1884–1917

	German. £	British. £
1884	2,993,839	10,758,594
1885	2,119,266	16,193,701
1886	2,280,145	13,118,657
1887	2,322,790	12,348,895
1888	2,381,060	13,172,838
1889	3,610,000	14,899,055
1890	4,438,057	17,165,083
1891	4,694,039	17,256,122
1892	4,795,570	16,397,835
1893	4,446,500	15,336,764
1894	3,696,000	17,667,008
1895	4,084,000	19,637,238
1896	4,313,000	22,271,901
1897	5,753,000	20,848,863
1898	5,972,500	23,880,876
1899	6,486,000	25,731,220
1900	7,600,000	29,998,529
1901	9,535,000	30,981,315
1902	10,048,948	31,003,977
1903	10,406,265	35,709,477
1904	10,543,318	36,859,681
1905	11,425,725	33,389,600
1906	12,335,916	31,869,500
1907	13,496,000	30,442,409
1908	16,950,000	32,319,500
1909	20,145,000	...
1910	22,000,000	...
1911	23,050,000	...
1912	22,450,000	...
1913	21,500,000	...
1914	20,800,000	...
1915	20,050,000	...
1916	20,450,000	...
1917	20,850,000	...

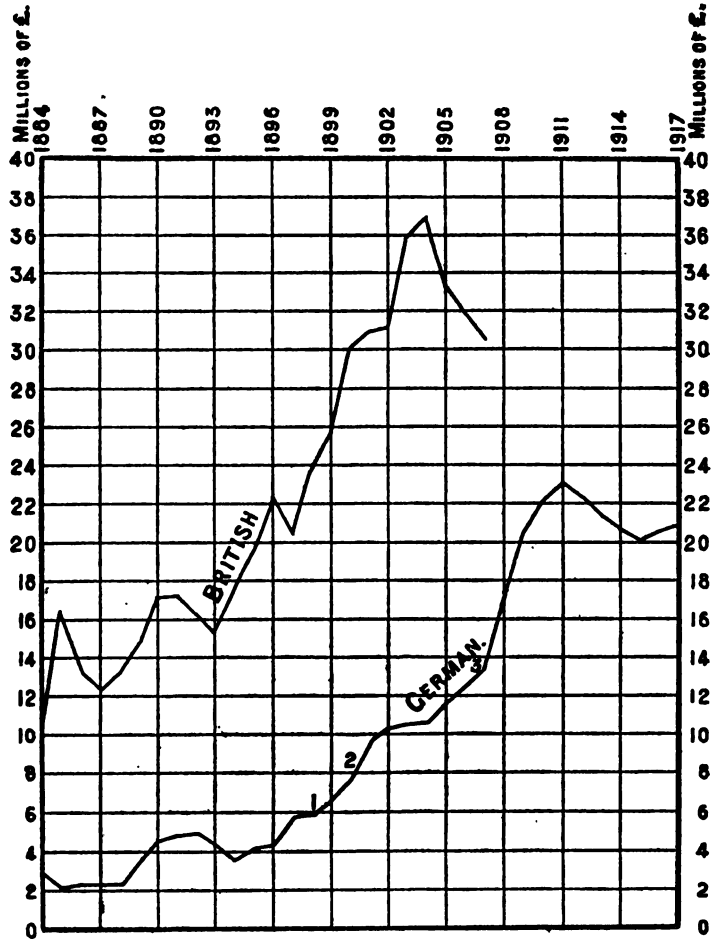


CHART SHOWING THE NAVAL EXPENDITURE OF GREAT BRITAIN (1884–1907) AND GERMANY (1884–1917)

NOTE.—1, 2, and 3 indicate the years in which the successive special programmes were entered upon.

VII. MERCANTILE MARINE

Extracted from Board of Trade Return, No. 348, *of* 1907

A. BRITISH AND GERMAN MERCHANT TONNAGE

	British.	German.
1870	7,149,134	982,355
1880	8,447,171	1,181,525
1890	9,688,088	1,433,413
1895	10,504,662	1,502,044
1899	10,602,199	1,737,798
1900	10,751,392	1,941,645
1901	11,120,388	2,093,033
1902	11,566,745	2,203,804
1903	11,831,439	2,322,045
1904	12,156,101	2,352,575
1905	12,332,404	2,469,292
1906	12,791,831	2,515,815[1]

[1] Excluding vessels under 100 tons gross.

B. MERCHANT VESSELS CLASSIFIED ACCORDING TO THEIR TONNAGE

1900.

	British.		German.	
	No.	Net Tons.	No.	Gross Tons.
Under 50 tons	17,179	427,456	1,478	46,501
Of 50 and under 100 tons	7,822	548,031	515	36,416
,, 100 ,, ,, 500 ,,	4,637	1,015,824	666	151,948
,, 500 ,, ,, 1,000 ,,	1,278	935,730	364	270,792
,, 1,000 ,, ,, 2,000 ,,	2,508	3,751,410	435	636,522
,, 2,000 ,, ,, 3,000 ,,	1,067	2,530,134	197	481,796
,, 3,000 ,, ,, 4,000 ,,	248	841,697	83	282,627
,, 4,000 tons and above	136	701,110	145	919,798
	34,875	10,751,392	3,883	2,826,400

1905.

	British.		German.	
	No.	Net Tons.	No.	Gross Tons.
Under 50 tons	18,866	449,391	1,503	48,423
Of 50 and under 100 tons	8,149	574,813	647	45,212
,, 100 ,, ,, 500 ,,	4,890	1,054,907	752	169,229
,, 500 ,, ,, 1,000 ,,	1,152	825,230	331	247,025
,, 1,000 ,, ,, 2,000 ,,	2,177	3,335,471	484	721,350
,, 2,000 ,, ,, 3,000 ,,	1,489	3,591,343	229	547,197
,, 3,000 ,, ,, 4,000 ,,	347	1,178,588	120	411,594
,, 4,000 tons and above	247	1,322,661	254	1,535,426
	37,317	12,332,404	4,320	3,725,456

C. TONNAGE BUILT, BOUGHT ABROAD, AND SOLD TO FOREIGNERS IN GERMANY

TONNAGE BUILT AND ADDED TO THE REGISTER, TONNAGE BOUGHT ABROAD, AND TONNAGE SOLD TO FOREIGNERS, IN GERMANY, IN EACH OF THE YEARS 1878 TO 1905

Years.	Tonnage of Vessels Built and added to the Register.	Tonnage of Vessels Bought Abroad.	Tonnage of Vessels (on the Register) Sold to Foreigners.
	Tons.	Tons.	Tons.
1878 . . .	32,631	40,625	19,259
1879 . . .	30,013	60,477	8,741
1880 . . .	25,460	55,367	17,827
1881 . . .	34,656	53,881	25,037
1882 . . .	62,411	56,317	20,359
1883 . . .	74,469	53,676	24,824
1884 . . .	54,727	31,192	22,728
1885 . . .	22,241	21,938	17,702
1886 . . .	37,741	35,410	21,700
1887 . . .	27,170	40,362	40,788
1888 . . .	28,281	60,880	44,150
1889 . . .	77,706	115,883	61,146
1890 . . .	71,895	22,847	48,575
1891 . . .	70,547	60,015	50,815
1892 . . .	49,307	60,722	39,691
1893 . . .	47,685	43,180	28,336
1894 . . .	71,960	59,116	44,011
1895 . . .	68,330	50,885	51,208
1896 . . .	42,179	97,585	42,608
1897 . . .	86,619	66,879	44,750
1898 . . .	88,608	92,735	52,529
1899 . . .	103,311	81,280	43,534
1900 . . .	118,828	177,007	46,864
1901 . . .	101,886	139,038	40,975
1902 . . .	108,318	75,434	30,749
1903 . . .	132,873	44,386	29,185
1904 . . .	105,408	49,828	87,565
1905 . . .	125,918	141,572	100,890

D. GROSS ADDITION OF TONNAGE TO REGISTER

	GREAT BRITAIN. Tons.			GERMANY. Tons.
1897 . .	489,835	...	...	153,498
1898 . .	709,870	...	...	181,343
1899 . .	792,307	...	...	184,591
1900 . .	784,986	...	...	295,835
1901 . .	773,917	...	...	240,924
1902 . .	797,243	...	...	183,752
1903 . .	645,117	...	...	177,259
1904 . .	703,830	...	...	155,236
1905 . .	780,561	...	...	267,490

E. TONNAGE OF VESSELS ENTERED AND CLEARED AT GERMAN PORTS IN THE FOREIGN TRADE

Years.	National.	British.	Other.	Total.	Proportion per Cent to Total.		
					National.	British.	Other.
	Tons.	Tons.	Tons.	Tons.	Per cent.	Per cent.	Per cent.
1870	1,255,150[1]	2,234,097[1]		3,489,247[1]	35·9	64·1	
1880	5,108,571	4,984,473	2,973,368	13,066,412	39·1	38·1	22·8
1890	9,275,710	7,466,231	4,365,039	21,106,980	43·9	35·4	20·7
1893	9,683,545	8,789,055	4,526,954	22,999,554	42·1	38·2	19·7
1894	10,167,417	9,349,727	4,981,956	24,499,100	41·5	38·2	20·3
1895	10,145,057	9,260,204	4,548,203	23,953,464	42·4	38·7	18·9
1896	10,283,952	8,560,071	5,242,609	24,086,632	42·7	35·5	21·8
1897	10,918,269	9,190,526	5,653,716	25,762,511	42·4	35·7	21·9
1898	12,035,264	8,925,277	6,576,449	27,536,990	43·7	32·4	23·9
1899	13,383,514	8,424,687	6,371,625	28,179,826	47·5	29·9	22·6
1900	14,300,977	7,854,999	7,051,881	29,207,857	49·0	26·9	24·1
1901	14,670,783	8,174,948	6,647,312	29,493,043	49·8	27·7	22·5
1902	15,417,213	8,727,811	6,737,507	30,882,531	49·9	28·3	21·8
1903	16,145,298	9,007,080	7,385,407	32,537,785	49·6	27·7	22·7
1904	17,436,584	9,368,075	8,236,141	35,040,800	49·8	26·7	23·5
1905	18,646,727	10,404,666	9,273,867	38,325,260	48·7	27·1	24·2

[1] Exclusive of Hamburg and Bremen.

F. SUEZ CANAL TRAFFIC

TABLE SHOWING THE NUMBER AND TONNAGE OF BRITISH AND GERMAN VESSELS PASSING THROUGH IN THE YEARS 1894 TO 1906

	BRITISH.		GERMAN.	
	No.	Tonnage.	No.	Tonnage.
1894 . .	2386 ...	8,326,826	296 ..	887,363
1895 . .	2318 ...	8,382,075	314 ...	977,029
1896 . .	2162 ...	8,057,706	322 ...	1,120,581
1897 . .	1905 ...	7,389,237	325 ...	1,194,106
1898 . .	2295 ...	8,691,093	356 ...	1,353,161
1899 . .	2310 ...	9,046,031	387 ...	1,492,657
1900 . .	1935 ...	7,771,346	462 ...	2,047,230
1901 . .	2075 ...	8,651,015	511 ...	2,452,423
1902 . .	2165 ...	9,333,996	480 ...	2,371,046
1903 . .	2278 ...	10,215,252	494 ...	2,464,493
1904 . .	2679 ...	12,164,591	542 ...	2,736,067
1905 . .	2484 ...	11,507,796	600 ...	2,948,008
1906 . .	2333 ...	11,493,279	588 ...	3,022,767

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